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MILITARY BANDS AND MILITARY MUSIC.

A SERIES OF THREE LECTURES.¹

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LECTURE II.

Monday, 18th May, 1903.

General Lord CHELMSFORD, G.C.B., G.C.V.O., in the Chair.

BEFORE proceeding with my address to-day, I would like to state what I omitted to say in my last paper—that, by a regulation published about the year 1873, all those desirous of becoming army bandmasters were, and still are, compelled to pass an examination at Kneller Hall. In a few cases only candidates have received appointments after passing the examination; but the general rule is that students enter, and remain there from two to four years, passing out according to merit. Every bandmaster now serving in the Army has been awarded a Kneller Hall certificate of qualification at some time or other. Having cleared up this point, I proceed to deal with the music used by military bands. I may say at once that the best military bands now play works of a far higher class than were formerly attempted; and I may add that the improvement, not only in the standard of performance, but in the class of music performed, is largely due to the interest manifested in music generally by his Majesty the King, and by the members of the Royal Family. I cannot understand why our native composers do not write directly for military bands. A number of foreign composers, who are well acquainted with the resources of military bands, have written most successfully for them. We British bandmasters are often accused of lack of patriotism, because it is said we accord a preference to works of foreign origin, but the fact is that the fault lies not with us, but with our British composers. Why do they not write directly for our military bands, or at least superintend the arrangement of some of their best works? When it is remembered that our military bands go to almost every portion of the British Empire, you can well understand the pleasure it would give bandmasters to

¹ The first of these Lectures appeared in the September No. of the JOURNAL.

bring forward the names and works of our native composers, and incidentally the composers themselves must gain by the public becoming familiar with their work. I may perhaps here name a few compositions by British musicians frequently played by military bands: overtures, "Di Ballo," "Yeoman of the Guard," and "In Memoriam," by Sir Arthur Sullivan; "Lurline" and "Maritana" by Vincent Wallace, "Bohemian Girl" by Balfe, "Britannia" by A. C. Mackenzie, and a few others; the whole of Gilbert and Sullivan's operas, and selections from other less known operas by British composers: "The Gipsy Suite," and the Dances from "Henry VIII.," "Nell Gwynne," and "Much Ado About Nothing," by Edward German; four dances in the olden style, Cowen; prelude to the opera "Colomba," and ballet music from the same, A. C. Mackenzie; suite, "Merchant of Venice," Sullivan; several dances by Meredith Ball, and part songs by Hatton and others. Not one of these pieces was written for a military band directly; they are all arrangements or transcriptions. Very often, too, if the arrangement of a piece is not made by one who thoroughly understands military instrumentation, the tone colour, the capabilities, and everything appertaining to the different instruments, the result is quite ineffective. An orchestral musician or an organist may arrange it, and the melody may sound all right to the average ear, but in the building up of the piece the proper balance of tone is not produced by the filling in of the inner parts, the arranger has not sufficiently studied the composer's ideas, and the arrangements, or so-called arrangements, consequently are failures.

Later on I shall give a few examples of good and bad arrangements.

I will now present a complete list of instruments as used in most military bands. The highest in pitch is the so-called E flat piccolo. It is really in D flat, and sounds a semitone above its written scale. There is also the E flat flute, which should be called D flat, and the "F" flute, which is really in E flat. My explanation of the wrong naming of flutes and piccolos is this: originally a concert flute (which is in C) was wrongly called a "D" flute, because the lowest note on the instrument was "D." Later on, for military band purposes, other flutes and piccolos were manufactured, which were also named from their lowest notes E flat and F, instead of, as in all other instruments, from the concert pitch sound obtained by the C.

Thus the so-called E flat flute or piccolo is in D flat, and the "F" flute is in E flat. The fact that the latter and the E flat clarinet are in unison is proof that they must both be in the same key. I now show you the E flat clarinet. This instrument sounds a minor third above its written scale; it is often employed for playing the same part as the piccolo; but it is sometimes used very effectively with the accompaniments. These two instruments, the piccolo and the E flat clarinet, are both high-pitched instruments. The flute as a rule plays off a part which may be specially written for it; or sometimes it doubles, that is, plays the same part as the piccolo, only it will sound an octave lower. The oboe is a double reed instrument, and can be used either for solo purposes, or to give colour to the accompaniments. The reed is kept in a small reed box when not in use. The oboe, especially in sustained

passages, is an instrument capable of very striking effects, and can be advantageously employed in either solo or accompaniment. I have met with passages for this instrument, written with shakes, etc., by people who, failing to understand the technical difficulties of the instrument, write very absurd passages, as indeed they do for other instruments. I think that every composer writing for an orchestra or military band should be able to play the scales and simple exercises fairly well on the whole of the instruments, and have some idea of the technique peculiar to each in the same way as at the Royal Military School of Music, where every student has to "pass" before a master on every one of these instruments, that is to say, he has to play scales and simple exercises on them all.

We now come to the B flat clarinet. This instrument may be termed the violin of the military band, the first, or solo clarinet, taking the part written for the second violin, and the third clarinet that of the viola. All B flat clarinets are the same, that is of the like pitch and compass, and it seems to me a waste of material to have so many parts written for them as we find in some arrangements—solo clarinet, repiano 1st clarinet, 2nd clarinet, 3rd clarinet, and 4th clarinet. Three parts would be sufficient: solo clarinet, repiano clarinet, and 2nd and 3rd clarinets combined. Generally all that is written for 3rd and 4th clarinets would be more effective on tenor and bass clarinets or bassoons. Many composers who have written for the clarinet have thoroughly understood the instrument and Weber, in particular, composed very frequently and effectively for it. Some of his passages are admittedly difficult, but on the other hand he wrote for that part of the clarinet where the player could not only do justice to the instrument but to himself. I may mention that this instrument is very susceptible to atmospheric changes, and rises in pitch considerably in a warm room. For instance, in a room like this, which might become heated, the clarinet would be more susceptible to those changes than a cornet, or trumpet, or euphonium, and at first, on tuning, the instrument possibly would be flat. But after being in the room a certain time, say ten minutes, the clarinet player would find that instead of his instrument being flat, he might have to pull out *this* socket, as owing to the heat of the room, the instrument would get warm and sharp in its pitch.

Let us next consider the alto clarinet in E flat. With the exception of a few notes, the fingering is the same as for the B flat clarinet. It sounds an octave lower than the E flat clarinet, and has a very fine full tone; a little more reedy than the B flat clarinet. It has a beautiful tone, and gives valuable support to the 3rd clarinet, and also to the bassoon when required.

I am sorry to say it has been much neglected in military bands generally, but is receiving more consideration in the band arrangements of the present time.

I come now to the saxophone family. The members of this family are brass reed instruments; the complete set as generally used is six, and the names are—the high saxophone in E flat, soprano in B flat, alto in E flat, tenor in B flat, baritone in E flat, and bass in B flat. There are two of the family here, the E flat alto saxophone, and the B flat tenor. These instruments were invented by Adolph Sax, about the year 1846. The quality of tone

resembles a mixture of violoncello, clarinet, and cor-anglais, and at the same time it has a kind of brazen colouring, which gives it quite a *timbre* of its own. In the lower register of the scale of the saxophone most beautiful and unique effects may be obtained, especially when two or three of them are used together, or in combination with other instruments. The fingering is similar to that of the flute and oboe. Any clarinet player in a band would in a very short time make himself master of the mechanism. Until the last ten or fifteen years these instruments were not used to any great extent in this country, though, I have known a few bands to employ one, or perhaps two, of the family long before the period mentioned. The two mostly used have been the alto E flat and tenor in B flat. In French military bands the saxophone has taken a very prominent place; in one band in particular they have eight in use, and very fine effects are obtained from them. In most of the French bands they are used. In the German bands they are not employed so largely, in fact very few bands in Germany use the saxophone at all. Many of the English bands, especially in the Line regiments, have a quartette of them, which I think is sufficient to meet all requirements in the matter of tone-colour. They may be used for solo playing, or for colouring accompaniments, and also, with very beautiful effect, in church music. The quality of tone is quite unique, and they require not only very delicate playing, but also delicate handling. The compass of the instrument is from the lower B to the high F. I will write you the notes on the blackboard, that you may know exactly. (Illustration.) That is the note that the instrument itself sounds. The effect of those two notes, concert pitch, would be as below. (Blackboard example.) There are two notes above this note which solo players might reach, but in scoring for the instrument one should not write beyond that, unless the music be intended for an exceedingly good soloist.

We will now take the bass clarinet in B flat. This instrument is an octave below the ordinary B flat clarinet. Instrument makers used to manufacture them in other keys, but they are now only made in the one key in this country. It is constructed of larger dimensions than the ordinary clarinet, but the compass is much the same.

Sometimes a separate part is written for this instrument, but more often it plays from either the first or the second bassoon parts. It is not advisable to write higher than C, though a good soloist can play four or five notes higher. Those who have heard the music of "Les Huguenots" at the opera will remember a solo in that notable work which is given by Meyerbeer (who knew how to write for it) to this instrument, and many may have often heard the solo without having seen the instrument. Although these instruments, *i.e.*, saxophones, bass clarinet, and E flat clarinets, give most beautiful colouring to the military band, they would be very useful instruments in the orchestra as well, if properly treated, and if those who write for them knew where to utilise them in combination with stringed and brass instruments.

In these clarinets we have a family of instruments of totally different tone-colour, but the lower notes of the bass clarinet are very rich and effective, as the passage I have just mentioned, written by Meyerbeer, in the opera of "Les Huguenots," shows; where he takes the instrument down to its lowest note in the middle of a cadenza,

and also up to high G. But this passage is only written for a soloist. The fingering of the bass clarinet is practically the same as for the B flat clarinet. The bassoon is treated as a bass to the oboe, and may be used with excellent effect in combination with the other reed and wood-wind instruments. In the higher register the quality of the tone has a marked resemblance to that of the cello. The compass is from the low B flat to high B flat, but it can play up to C, or even D. It does not follow because a writer for orchestra or military band may know the *compass* of the instrument, that he is qualified to write for that instrument, because many passages in between those two notes, low B flat and high B flat, may be quite unplayable, and again some of the notes on the instrument are weak and ineffective, so that any-one writing for this and other instruments should understand the good parts of it, *i.e.*, the notes which are good, their quality of tone, and also the technical difficulties.

The cornet used in military bands is invariably the one in B flat, and it has the usual scale of open and harmonic notes, the fundamental note being the low C, which is very low. The open notes of the instrument are these (blackboard example). These are the natural notes, but all the other notes are obtained by the use of the pistons. (Here examples were given of good and bad passages written for the cornet.) There are works written for the cornet and other instruments which give the whole of these scales and the capabilities of the instrument.

We now come to the valve trumpet. Some trumpets are longer than this one. This instrument must not be confused with the trumpet in use in the cavalry, *viz.*, the field trumpet, because the field trumpet has no pistons. This trumpet is used in certain military bands, but not to such an extent as it ought to be. Some arrangers simply employ it in *tutti*, and in doubling the horn parts, whereas it might often be employed in other ways, with splendid effect. In writing *Fanfares* this is the instrument which should have first consideration, and it might be utilised not only in that respect, but in many others. In the marching band one or two of these instruments, if played well, give a very fine quality of tone, and are most brilliant in effect. The cornet cannot possibly replace the trumpet, the quality of tone is so essentially different.

Let us now turn our attention to the French horn. Only French horns in F and E flat are used in military bands. In some bands only the F horn is used; this is done to suit the convenience of the players, but this fact may also be accounted for by the horn being very susceptible to changes of temperature, and a cold crook put on suddenly may lead to the instrument becoming too flat. In using an F crook it necessarily follows in the case of an inexperienced player that certain open notes, which should be produced with the E flat crook, must suffer by having to be played by the horn crooked in F. I will give you an example of this (blackboard example). The top line I have written for the F horn; the bottom line for the E flat horn. All the notes written here are open notes; there is no necessity to put a valve down at all. But in the passage on the top line for the horn in F, these notes must be produced by putting down the first piston, and consequently the notes are not so good as the open notes of the E flat horn. The ordinary fingering on the F horn is to use the first valve, as these four notes on the E flat horn are open notes, and

are therefore far more effective by being played on the E flat crook, which is a larger crook. Of course a soloist would play these notes all right and with ease, and the notes would be effective, but it must be remembered that all players in Army bands are not soloists, or in other bands, for that matter. So a composer, in writing for the horn, should always bear in mind what open notes can be played on the instrument, and what notes are closed or valve notes. In most of the orchestras in London the players hardly ever use any crook but that in F.

Now take the saxhorn. Here is an instrument which is rarely used in our military bands now. At one time it took the place of the French horn in the military band, but never in the orchestra. It was invented by Sax, who also devised the saxophone, and from him the name is taken. The quality of tone is so bad that it does not blend well with the wood-wind instruments, or others used in military bands. The Althorn in B flat has the same compass as the B flat cornet, and the same fingering, but it sounds an octave lower. In my opinion the B flat tenor saxophone would be very much better employed in playing the part which is written for this instrument, because the tone of the Althorn is neither one thing nor the other. Its tone is something between the saxhorn and the euphonium, but it has not a nice full quality. Personally, I do not care about the instrument at all. It is not used in every band. I think the tenor saxophone would be a great improvement were it to take its place.

Here is a tenor trombone in B flat. It is used both as a solo instrument, for general effect and colour, and also sometimes as an accompanying instrument. No military band should be without at least two of these instruments. Apart from programme music, the tenor trombone plays a very prominent part in the orchestration of parade marches, etc., for military bands. I will explain the shifts and position. This open note (B flat) corresponds with the low C on the clarinet, and it is the same on the cornet. The fingering of the cornet I have explained. The open notes on the cornet would be C, G, C, E, G, B flat and C, while those on the trombone would be B flat, F, B flat, D, F, A flat, and B flat. Then you put down the first valve of the cornet for *that* note. Then for *this* we take the 3rd position of the instrument, which takes A flat, then E flat, etc. So you go on right up. Any player of the cornet would soon discover the right positions on the trombone. (Several other examples were given.)

Now we will consider the G trombone. As you see, it has a handle. This is on account of the slide being longer than that of the tenor trombone. You will observe that to get to the A flat, the 7th position, it would need a man with a very long arm to reach out to the end of the slide. Most players grip the instrument *here*. The G trombone is a minor 3rd below the tenor trombone. It is used in combination with the tenor trombones, and I may say it is an indispensable instrument in every military band. The C or B flat euphonium has quite taken the place of those disused instruments, the serpent and the ophicleide. It serves as a solo instrument, and gives great support when required to the bombardon, for parts written an octave higher than that instrument. The euphonium in general use is that with four valves, but some solo players have an instrument with five valves. In the hands of good players, it is a most beautiful

instrument, the tone and quality being very rich indeed. There are many good euphonium players in London and in the Army generally, and the euphonium is an instrument which is always, when in good hands, worth listening to, and one to which writers and arrangers might well give more consideration than they do. The bombardon is an E flat instrument. For the convenience of military bands, it is tuned in E flat and B flat. Some of the Continental bands use an F bombardon. The compass of the E flat bombardon extends to the fundamental note of the 16-foot octave, but that of the B flat bombardon in the 32-foot scale. This instrument has nominally only three pistons, but on most there is a fourth. Very few military bands would use an instrument without the fourth valve, which is most useful, in fact I regard it as indispensable to the instrument. I have not a B flat bombardon here.

The next instrument I wish to deal with is the side drum, of which we have two here. *This* (showing examples) is called the cheese pattern drum, and *this* is the Guards' pattern side drum, which is now in general use throughout the Army. Some years ago the cheese pattern drum was used in most regiments. But even at that time I have known some regiments to have the Guards' pattern. The Guards' drum is now adopted by the War Office, and is the type served out to the Army. Neither the side drum nor the bass drum requires tuning.

I should now like to give you a few examples in military band scoring. As I have before explained, in writing for an orchestra, so in writing for a military band, the composer or arranger should be acquainted with the technical difficulties of the instruments he is writing for. I do not think it sufficient to only know the compass of the instrument. Passages are often written which are really quite unplayable, and even sometimes when certain passages are played they are not well arranged and consequently are quite ineffective. Before proceeding to give you a few examples of military band scoring, I would like to say that it is, in my opinion, no greater liberty to take works of great masters, provided they are suitable, and arrange them for military bands, than it is to take pianoforte pieces of great masters and score them for an orchestra. It has been said too often that military bands should only play what is directly written for them. If this were the case we should have a repertoire of twenty or thirty pieces to select from, and nearly all those of a light character. With reference to this point, many composers and arrangers, and sometimes musical critics go to concerts and hear a military band playing a Liszt Rhapsody or a movement from a Beethoven Symphony, and say, "military bands have no right to play that music; it was not written for them." But if not, are we to confine ourselves to those twenty or thirty pieces that were directly written for military bands? On the other hand the Liszt Rhapsodies—there are fifteen of them—were originally written for the pianoforte. That being so, one may pertinently inquire, why did arrangers take them in hand and score them for the orchestra? Surely that was as great a liberty as it is for us to take them and score them for our bands. We can get very excellent results by playing these works, as is proved by the fact that nearly all the London bands playing at the Sunday concerts perform these and other works before the public, and give satisfaction to their audiences, not once, but dozens of times a year. I think this justifies

their arrangement for military bands, and also most of the works of the great masters. Playing such music is educating the players in the band, and the listening to it educates the audiences. Moreover, the works of the master himself become better known than if they were simply played upon the piano or orchestra, or whatever else they may have been written for. Naturally there are some compositions which are not suitable for military bands, and it is advisable to leave these alone. But that requires a little discretion on the part of the arrangers, and I do not think any good musician would attempt to score for bands works which are not suitable for them. There are plenty of works which are very adaptable.

In illustrating military band scoring, I may mention that the instances I shall give will be played over next week (by the kind permission of Colonel Sir Francis Graves-Sawle), by a few members of the Coldstream Guards' band. The illustrations to which I shall direct attention to-day are those of good and bad scoring for military bands. We have *here* a piece of music from a well-known work. This is a passage written in Allegro Vivace. There are six notes to be played in a bar, and the time is very fast. *This* is the instrument upon which it is to be played (the euphonium). It is quite as impossible for a man's tongue to go so fast, let alone the physical impossibility of his obtaining a sufficient store of wind from his lungs. This suggests that the arranger has not given proper consideration to the instrument, or any consideration to the composer of the music. In fact, it looks as if he has just taken the orchestral score and transposed it for a military band, and given the passage to any instrument—throwing it at the instrumentalist, as it were, with the observation, "There is something for you; do the best you can with it." The passage might have been given to the clarinets and bassoons as an alternative, with much better effect. The consequence of the player being unable to accomplish the task which is set him is that the effect intended by the composer is lost.

Here is a passage from another piece of music, written for the bombardon (blackboard example). The ordinary fingering of the passage is this:—The first note (G) is obtained by placing the 1st and 2nd valves down, and the second note (F sharp) by placing the 2nd and 3rd valves down, and so on. It runs in this way:—1st and 2nd, 2nd and 3rd, 1st and 2nd, 2nd. All notes that can be taken with the 1st and 2nd valve may also be taken with the 3rd only. But the passage is really impossible; no bass player would play that passage at the speed at which it is written. If the arranger had just left out one note there (example), and substituted a rest, and written the passage as I have it underneath, three notes instead of four, it would have been practicable, and *those* other notes could have been given to another instrument. Unless some such arrangement were made, the passage would have been quite spoilt, and Meyerbeer's ideas would have been lost. Moreover, the player who tried to perform the passage would be dissatisfied with himself, and the result would be a fiasco so far as the general rendering of the passage was concerned. The next example is taken from the overture to "Tannhäuser," in which there are certain passages in the "Finale" which Wagner wrote (blackboard example), but these passages have been arranged for military bands, in quite a different form (as in the top example),

which hardly anybody would recognise. Why this has been done I cannot say, because the passage as originally written is on the clarinet, and I think that the band which could not play that could hardly be called a band. I feel certain that every Line or other band in the Service would have some clarinet players who could play those passages. Why they should be altered as they are here I fail to comprehend. That is one of the reasons why some people, listening to military bands, say, "Well, they are playing a selection from 'Tannhäuser' or other compositions, but that is not the way the composer wrote it; I suppose the bandmaster altered it." Thus the bandmaster gets the blame, and people do not think of the arranger, who put it in that form. Nine times out of ten he is the culprit, and not the bandmaster. A bandmaster, if he knew what the composer's ideas were, would not think of altering the passages, provided they were playable by the instruments which he had at his disposal. That is one of many passages. Not a few good compositions are spoilt through this same kind of bad arrangement. I have several examples—I could go on for hours showing them—of bad scoring, but I do not think it is necessary to give them now, as I shall deal with them next week, and show you practical illustrations. I have been asked several times my views on the subject of wood-wind instruments used in military bands, whether they should be of ebonite, cocus wood, or black wood. As a result of my experience, I would, for clarinets, strongly recommend cocus wood, or black wood—the latter for choice. Black wood is not so influenced by variations of temperature, and does not expand or contract to the same extent as West Indian cocus wood. In very many cases wood instruments split badly through the carelessness of the bandmen and the lack of supervision on the part of those who are in charge of them sometimes is responsible for the existence of defects. This carelessness takes the form of moisture being allowed to remain in the instrument after use, so that when it is again brought into use and exposed to any great heat, the natural expansion of the inner portion invariably splits the outer. Instruments made of wood are much more easily replaced and less costly than ebonite. Rosewood I would recommend for bassoons and oboes, as it is porous and open-grained, and will stand a hot climate well, as I know from my experience, and I have tried ebonite, cocus wood, black wood, and rosewood, in such stations in India as Cawnpore, Peshawar, also in Burma and Africa—you would not get a more trying place for dry heat than Cawnpore. Another extreme is Bombay, and so also is Calcutta. One instrument I had was an ebonite clarinet, the tone of which was not so free or so liquid as it should be. I played it myself, and the player to whom it belonged gave it up after two or three months' trial, on the plea that he did not like it so well as the others. Thursday in India is the general holiday in each week, and on Wednesday, during the hot weather season, after the playing was over for the day, we used occasionally to put our wood-wind instruments into a little receptacle filled with oil, where they remained until the Friday morning. On Friday morning they were taken out and wiped dry. After the practice was over, the players had to clean their instruments, or wipe them dry, and show them to the band-sergeant. Then the instrument was oiled with a feather and put away until again required. I think, under those conditions, I am right in saying that it did not cost a large amount a year for the repairs of wood-wind instruments.

My reason for dwelling on the subject of the splitting wood-wind instruments in India is that I have received a few letters asking my opinion on the subject.

I think I have now exhausted my subject for to-day, and next time I hope to have the honour of submitting to you examples of military band scoring, and I will give illustrations of this scoring, both for operatic music and for church music in its various forms.

Mr. A. H. BEHREND :—I would like to refer to one point touched upon by Mr. Rogan. He mentioned that bandmasters were often accused of want of patriotism, and that they give preference to foreign composers. We have never had a chance of hearing good bands. It is only within the last few years that military bands have played at important places, such as the Alhambra, Queen's Hall, Albert Hall, etc. Formerly the music played was of distinctly lighter character, and it was not worth while writing especially for them. Now that bands have reached such a perfect state of efficiency, it is a great pleasure to work in the new fields of music that they have opened out for us. In fact, I myself have taken the subject up seriously, and have written and arranged several pieces for military bands. I think Mr. Rogan has been a great pioneer for us. He has rendered all the great masters with an accuracy, that a few years ago would have been deemed impossible. Now, I am sure British composers will take up this military band scoring, and we shall not in the future depend solely on the writings of foreign composers.

Mr. A. V. BARWOOD (Bandmaster 1st Battalion Royal Berks Regiment) :—Mr. Rogan spoke of the B flat tenor saxophone taking the place of the Althorn, and parts written for that instrument. I have tried that, with varying success. In certain passages it is decidedly an advantage to have a B flat saxophone, and to leave out the Althorn (I use both instruments in my band); but in other places, I have found that it is absolutely necessary to have the Althorn, as the B flat saxophone is not strong enough to cope with the accompaniments which may be written for that particular solo. Another point is the arranging of pianoforte pieces for bands. I consider that pianoforte music is very greatly enhanced by being played on military bands, for the reason, that, by this means you obtain different qualities of tone-colouring which cannot be got out of the piano. All those instruments which are played have their own tone-colouring, and the combinations of them give a better effect than the pianoforte can possibly yield. Therefore, I consider, that pianoforte music is greatly enhanced by being played on a military band, as a general rule. Some such pieces cannot be done justice to, because we cannot get wind instruments to render passages as they can be played on the piano. The next point is that of the suitability or otherwise of music written for orchestras being transcribed for military bands. I do not know whether anybody will agree with me—possibly not, I know some people do not—but in my opinion, a good example of the unsuitability of orchestral pieces for military bands is Tschaiakowsky's "Symphonie Pathétique" (I do not know whether there are any other arrangements in existence than the printed arrangement by Boosey). Justice cannot be done to it, and you cannot get the effects which are obtainable in a stringed orchestra, for which it was originally written. To arrange well is a very difficult matter, and arrangers do not always take into consideration, as Mr. Rogan indicated, the point I have referred to. There is always a possibility of the rendering being either too heavy or too light. I agree with Mr. Rogan on that point as to arrangers not taking into

consideration sufficiently the capabilities of the instruments which they are arranging for. Even the sound of the instrument is not always sufficiently considered. Many arrangers when they know the compass of an instrument imagine that it is the easiest thing in the world to fill in the notes from a pianoforte score for a few instruments, irrespective of the capabilities or even the sound of those instruments. Therefore, you frequently get accompaniments too light or too heavy for the solo instrument. With regard to the semiquaver passage in Mr. Rogan's last example, I myself, have arranged that my clarinet players shall leave out the top octave occasionally (not throughout the movement) where they start with the two F's, and instruct them to breathe at that place, and then continue the rest of the passage, and I find it very effective. The general effect is obtained just the same, because you then get the effect without leaving out practically any notes, and there must be breathing points. I would like to ask Mr. Rogan, whether the arrangement of "Tannhäuser" which he speaks of is Chappell's new arrangement.

Mr. ROGAN, in reply, said :—The arrangement of "Tannhäuser," which I referred to, is one published by Chappell & Co. I was very glad to hear the remarks of Mr. Barwood on military band scoring. I believe I was the means of Mr. Behrend taking up military band scoring about a year ago. Mr. Behrend is a very distinguished musician, and a grandson of Balfe, one of the greatest British composers who lived in the last century. He has followed the profession all his lifetime, in Germany, in England, and in other places. I have great pleasure in stating that he has arranged and composed several works for military bands. Mr. Behrend was formerly an orchestral writer only, but having taken up military band scoring, and having done so well, publishers have accepted the music he has composed for military bands. I am glad to hear that Mr. Barwood is interested in the B flat tenor saxophone and the saxophone family generally. Possibly the saxophone may not be strong enough to bring out effectively the parts of the Althorn whose place I suggested it should take, but my objection to the Althorn is, that it is neither one thing nor the other; it is not a euphonium, it is not a trombone, and it is not a saxhorn. I do not think there is much quality of tone in the instrument, and for that reason I do not care for it. Certain notes on the Althorn are most objectionable. That is my reason for suggesting the tenor saxophone. With regard to pianoforte music, I agree with Mr. Barwood that some pieces are often improved by being scored for military bands, on account of the great tone-colour that can be produced, and because of the other effects possible, which cannot be obtained on the pianoforte. With regard to the "Symphonie Pathétique," two or three of the movements do, I think, lend themselves well to military band scoring. The 5-4 would, I think, be better if arranged in another key. With regard to the scoring of accompaniments for a military band, I agree with Mr. Barwood. In the passages from "Tannhäuser," the omission of the high note, the octave of the F, for the clarinets, is important. I do not think the passage would work out well. You would not get the effect intended by the composers of those streaming semiquaver passages, if you leave out the octave. The accent on the first two notes as originally written is everything. Next week I shall have pleasure in playing the passage over to you, and you shall hear the result. It will also give me great pleasure to play the passage in the way that has been suggested this evening.

The CHAIRMAN (General Lord CHELMSFORD, G.C.B., G.C.V.O.):—I am sure, ladies and gentlemen, you will wish me to express your very

hearty thanks to Mr. Rogan for the very interesting lecture he has given us, as well as the blackboard illustrations, and the examples of the various instruments which are played in a military band. As I said last Monday, I am quite sure that if those who attend concerts, and who are interested in classical music would only get a larger acquaintance with the instruments which form part of the orchestra, their pleasure would be very much enhanced, because they would recognise during the playing of an overture, or whatever the piece might be, exactly the capabilities of the instruments, and come, in time, to look upon it as an old friend. I hope that next Monday, those who are here will attend again, and hear a practical illustration given by Mr. Rogan's bandmen as a supplement to the two lectures which he has already given to us. I need not ask you to formally proclaim the very hearty vote of thanks which in your name I beg now to tender to Mr. Rogan.

LECTURE III.

Monday, 25th May, 1903.

General Lord CHELMSFORD, G.C.B., G.C.V.O., in the Chair.

LAST week I dealt with instruments used in a military band; and I left off at the point at which I was talking of military band music and scoring. I promised to give a few examples of military band scoring to-day. Before proceeding with these illustrations, however, I should like again to point out the necessity of composers and arrangers not only having a good knowledge of the fingering of the instruments, but an understanding of some of the technical difficulties connected with them. I stated last week that I thought it no greater liberty to take an orchestral work of one of the great masters, provided it were suitable, and arrange it for a military band, than it was to take pianoforte pieces, also by great masters, and score them for an orchestra. You will doubtless remember some of the glaring examples I gave last week in military band scoring, and I will now, by the kindness of a few members of the Coldstream Guards' band, have them played over. But before proceeding with this I will again write one or two of the examples I gave you last week. Here is a passage which is in the opera of "Carmen." It has been arranged, or transcribed for a military band. *That* passage has been given to the euphonium. *This* (showing instrument) is a C euphonium, but those generally used are in B flat. On the ordinary euphonium the highest note is B flat. To keep a passage like that going for 30 or 40 bars would be quite impossible. But the player is then after playing this passage expected to continue with a similar passage, only much more difficult, sustained for about 60 bars. It would be a sheer impossibility for any player to play those passages as written. This goes to prove that many of the arrangements which are made for military bands are undertaken without sufficient care being exercised, and without even introducing the colouring which the composer himself intended. We will play a few bars of this over now, so that you may judge of the effect, first with this instrument (the euphonium) and then without it. The solo is given to the flute,

but the accompaniment is too heavy; there is too much going on otherwise to allow of the flute standing out as it should. The balance is not even! The passage will now be played with the bassoons and clarinets playing the accompaniment. We will now take the next movement. You will notice the tongue itself plays about the cup of the mouthpiece. It would be practically impossible to play those six notes in the time in which they were written. The passage could have been given to other instruments with far better effect than by employing the euphonium, especially in that register. Now we will play the 6-8 without the euphonium, and you will notice that this passage is continued right to the end of the piece. That gives you an illustration in a small way of the difference in the effect when that instrument is employed in its proper place, and its compass taken into consideration. I will now proceed to give you illustrations of the overture to "Tannhäuser." The first part which will be played is the middle of the second movement of the overture. The passage is written "tremolo" for the violins. In the arrangement now before me the notes are being sustained by the reed instruments, the cornet playing the solo. First of all we will hear it with the sustained passage, which is one arrangement.

My idea of a passage like that for a military band, so as to get as near as possible to the composer's intentions, would be to have it played syncopated by the clarinets, the cornet playing the solo. We now come to the finale of the overture, which is so very grand and effective when well rendered. The top line on the black board shows the way the passage was written by the composer; the second line illustrates the manner in which it has been arranged for a military band—one of many arrangements of this same piece of music. The bottom line embodies the suggestion of a gentleman who was present at the lecture last week. In discussing the matter after my lecture, he said that was the way in which his band played the passage, to get out of the difficulty. I do not see any difficulty in playing the top line at all. This is not a very intricate passage for clarinet players. The band which lacked clarinet players able to play that top line in this key should not play the overture at all. I think there are very few bands in the British Army that could not play the top line as written in this part of the overture. Preceding this there are many passages far more difficult for clarinets. We will play the first part as the composer intended it to be played. That is one of the arrangements in which it has been scored for military bands. We will now play an arrangement of the finale which, I think, you will admit is taking a very great liberty with the composer's work; there was no necessity for it whatever. This last passage is the suggestion which was made last week. We will now play the overture from that point to the end. These passages are continued to within eleven bars of the completion of the overture, and you will hear for yourselves whether clarinet players are capable of sustaining these passages right through. I think that goes to show that a little more care should be exercised by those arranging for military bands. In the form in which the arranger produced this it would have been very unacceptable to the composer, and had he heard this passage played by a military band in any but the original form he would probably have concluded that his music was not suitable to a military band. The same argument applies to many arrangements of pieces of music for military bands. I have known many worse cases than this. Military bands are often condemned for playing the high-class compositions by people who think they are not at all suited to them. But I imagine you will agree with me that adverse criticism results from the fact that the pieces have not been properly scored or arranged for the band. Whatever the capabili-

ties of the band, no military band would be able to give a good rendering of some of the pieces which are so arranged. But if the arranger would take greater care to carry out the ideas of the composer, as far as possible, I think good results might be achieved.

The next composition I shall deal with will be the "Casse-Noisette," or "Nut-Cracker," suite by Tschaikowsky. It is played frequently at the Queen's Hall, while the concerts are in progress there. The first number is an overture; and in the orchestral arrangements the only stringed instruments employed are two first violins, two second, and two violas. The cellos or double basses are not utilised at all in this number. We will play a few bars of the march, the overture, and a few smaller numbers. My object in playing this piece is to try and illustrate that it is possible for a military band even to play the most delicate compositions. There are works written with peculiar effects for stringed instruments which military bands possibly should not attempt. If the passages are not over-difficult, and are within the compass of the instrument, it is all right. If they are written in a peculiar position for stringed instruments it is more difficult for a military band to get the effects which the composer intended. In this suite, however, I do not think those difficulties present themselves. We will first play the march and then the overture. A great deal of the orchestration used is also employed in the orchestra itself—I mean orchestration for the military band. We will now play a few bars of the overture. It is not possible to get exactly the same tone-colour, but we contrive, I think, to get a good colour. We will now take the Arab Dance. There is also a number, written for the celesta, but it is of too delicate a character to reproduce on a military band. In this Arab Dance we get an instrument introduced which is seldom used in a military band, namely, the Cor-Anglais. Another dance, in the same suite, is called the Reedpipe Dance. In the orchestra it is arranged for three flutes, but as we have only one flute here this afternoon the other parts will be played by other instruments. The next piece is a Chinese Dance, and it is said that the composer, when writing this, must have had in his mind a Chinaman's pigtail. You will notice the long semiquaver passages allocated to the flute and piccolo from the third bar to nearly the end. Another feature of this piece is that the bassoon take the lead in the accompaniments at the beginning of the number; you will kindly observe that the clarinets play pizzicato passages, and the ensemble is not at all ineffective. The next piece we come to is the Flowers Valse. In the introduction of this number the harp is used in a very prominent way, so the difficulty of scoring this for a military band is possibly greater than scoring some of the other numbers, because it is not an easy thing to imitate these instruments in a military band. However, I think we have got as near to it as possible. The next piece to be dealt with will be a Liszt rhapsody. There are fifteen of these rhapsodies written for the piano, and this is one which has been arranged for a military band. We will now play No. 2; we also play No. 1, which is in manuscript. This, I think, it is generally admitted, is a pianoforte piece which comes out well in a military band; certainly it does not lose anything in the quick movement. Originally it was arranged for an orchestra, and afterwards converted for a military band.

I am now going to give you a few examples of Indian music as arranged for military bands. No serious attempt has ever been made to bring the music of India to the notice of Western people, in the shape of selections, or fantasias, or solos, or anything connected with a military band, or, for that matter, with an orchestra. Indian music itself, that is,

the tunes as they are actually sung and played in India, have never, so far as I am aware, been published in the form of a selection by anybody. It was my privilege during my stay in India to make the acquaintance of a native gentleman who took a great interest in the music of his country, the Maharajah Mohun Sourindro Tagore, residing in Calcutta. He spends a good deal of his time and money on the music of India. I made his acquaintance when I was in Calcutta; and there and in other parts I was frequently asked why we never played some of the music of the country. My reply was, that, when I had an opportunity of making a good collection of tunes and bringing them before the British public I would do so. The opportunity has, during the last few years, been given me; and a selection of Indian melodies has now been arranged for military bands and will shortly be published. Some of these tunes I obtained from the Maharajah Mohun Sourindro Tagore when in India. Others he has sent me at different times. I think when you hear them you will agree that many are very beautiful melodies, and certainly ought to be better known. In my own Indian experience I felt at times the want of some good native melodies to play. They are very difficult to obtain because the ordinary song which you hear in the bazaar there would not commend itself—or at least very few of them—to the average ear. It is only at the parties or wedding feasts that you would hear good singers and good players. They have in India seventy-two different arrangements of the chromatic scale. They include our major mode, both forms of our minor, and the ecclesiastical modes, used in what is known as Gregorian music. These peculiarities are also found to a great extent in the folk songs of Europe, and a number of others which, of course, are quite unfamiliar to Western ears. Of the last named many are quite unsuited for harmonisation on any plan which would at once commend itself to European musicians. The few bars of this which will be played are written on one of the seventy-two chromatic scales; it is not a tune, but simply an introduction, which leads to a hymn, sung in praise of Vishnu. The Hymn of Vishnu is of great antiquity, and I think you will admit that it is most impressive, and that it certainly lends itself to military band treatment. There is another in this selection called the Krishna Hymn. Before proceeding with that we will play a popular tune, called "Taza ba Taza," which is played all over India. There are several beautiful sacred tunes, but time will not permit of going through them all. One of these is called "Hail, Royal Prince!" It was written by the gentleman whom I have already alluded to, being composed on the occasion of the visit of the Prince of Wales, now the King, in 1875 and 1876, and dedicated to him. The next is also a well-known tune which is played and sung. It is a street beggar's song, and well known throughout the bazaars in India. The finale of the selection is the Hymn to Vishnu; the only difference is that you get it in a quiet church-like form, at the beginning of the piece, while in the finale it reappears in a grander form, and is contrapuntally treated according to our Western ideas. Of course it must be understood that in India they know nothing at all of harmony; it is simply plain melody accompanied sometimes by a tom-tom. It, therefore, might appear that we are taking a liberty in arranging these melodies. But, as I explained to those in India who are interested in the matter, Western people would never listen to their melodies unless they were harmonised. We will play the finale. It is so fully scored that it cannot be played softly to give the proper effect intended, and, therefore, all the numbers are not adapted to a small room. In the last part you will hear a few bars of the National Anthem in association with an Indian melody, and two or three bars of the Danish hymn at the same time.

I would now like to give you a few examples illustrative of the scoring of church music for a military band, to accompany the service. We will play a chant, in the first place in the ordinary way, and then softly, with a little varied colouring or orchestration. I think more can be done with a military band in this respect than is usually the case. Many bands take a great concern in it, but others do not exhibit that interest which I think they might. At Wellington Barracks the choir is composed of drummer boys, and the men quartered there for the time being. The band accompanies the service; but as the service is sung in unison, and the boys and men are not trained vocalists, the effect of the singing is not such as you would get at Westminster Abbey or St. Paul's. None the less, the service is of a very bright and hearty character, and I think the band itself makes up a great deal for the deficiency of the choir, when it is attended to. The next illustration of scoring I have to give is a piece entitled "The Last Good-bye." The reason for playing this little piece is to introduce to your notice the tone-colour of the saxophones. I spoke of the family of the saxophones last week, and gave an illustration of compass and what they were capable of doing. They give a beautiful tone colour, and, as I have before stated, in the French bands they are used to a great extent, but in London the fact of their not being used in the orchestras, or anywhere in this country for the matter of that, causes the instrument not to be taken up by the military bands so generally as they might be; there is very little private work to be done with them. The man who plays a saxophone will find scarcely any engagements to be had. *This* is called an E flat alto saxophone, and *this* is the B flat (showing instruments). We will now play a Tarantella, which is written no doubt with the view of showing off the clarinet playing of a band, and for general effect. It is not a great composition, but is very pleasant to listen to, and one which is invariably well received by audiences.

I do not think, my lord, ladies and gentlemen, that there is anything further I can say at present. I have stated my views on the several points to the best of my knowledge, which is founded on from 30 to 40 years' practical experience with the British Army. I thank you, my lord, ladies and gentlemen, for the very kind attention you have given me.

The CHAIRMAN (General Lord Chelmsford, G.C.B., G.C.V.O.):—I am sure we are very much indebted indeed to Mr. Rogan for having given this interesting series of lectures upon military band instruments and music. The qualities of the different kinds of music are, I believe, very little understood; and I am in hopes that Mr. Rogan's illustrations of the different instruments which are placed in a band, will tend to interest the general public a great deal more than has hitherto been the case. Hitherto they have been quite satisfied to listen to the band, and to appreciate the melody which they hear played upon it. I think, however, that very few, except those who try to play upon some of the instruments which are in the band, know what very great difficulties the bandsmen have to encounter, more especially in that country which Mr. Rogan knows so well, India, where the climate affects the instruments, and it is necessary that bandsmen shall be very careful to keep them in proper order. But those who have listened now to the Tarantella which has been played will agree that it is almost marvellous that men should be able, on an instrument like the clarinet, to get the tone and expression and

the fingering that they do. I am sure that in the thanks you are willing to accord Mr. Rogan, you will be anxious to include the bandsmen who have kindly come here, to show what can be done by men who throw their whole soul into the work, and who are really musicians in heart and soul. I am sure I can tender to Mr. Rogan our thanks for his kindness in delivering these lectures, and for bringing down a selected number of his own bandsmen to illustrate exactly the theories which he has enunciated in the lectures. He has well proved his case that military bands are worthy of having music written specially for them of the highest class, only that this must be arranged in a manner which is in accordance with the quality and tone of the instruments, and the capabilities of the performers. I only hope Mr. Rogan's lectures may lead those who have the task of arranging the classical music, and music of modern days, for military bands, to understand that they must really not only look to the compass of the instruments, but also to their capabilities and difficulties, and to the points which Mr. Rogan laid so much stress upon. I ask you to accord by acclamation your thanks to Mr. Rogan and the bandsmen who are here.

Mr. ROGAN, in reply, said :—On behalf of the members of the band and myself, I beg to tender you our most respectful and hearty acknowledgements of your cordial vote of thanks, and your kind appreciation of the playing of the band this afternoon, and also for the great attention and interest you have given to my lectures. If I have done anything to further the interests of military bands, or the interests of those who would like to write for military bands, I am more than repaid for the trouble of preparing my lectures. I think, as I have already stated, that if our British composers would only undertake to write directly for military bands, they would do a great deal better than by confining their attention to orchestras alone, and having their works transcribed or badly arranged. Sir Alexander Mackenzie, the Principal of the Royal Academy of Music, invited me to give three lectures there, with a view to encouraging the students to write for military bands, and I am pleased to say they have taken the matter up in a serious way. I invited the students to attend our rehearsals occasionally, so that they might become better acquainted with the technicalities and tone of the instruments. If they took some book in which the compass alone of the clarinet or other instrument is given, this experience could not be gained. It is quite essential when you are scoring passages to know the best parts of the instruments and how to write for them. There is no book published that I know of which will tell you all that should be known by composers. I am sure that by listening frequently to a military band, students would be able to overcome these difficulties to a great extent.

THE VON LÖBELL ANNUAL REPORTS ON THE CHANGES AND PROGRESS IN MILITARY MATTERS IN 1902.

Précis from the German by LIEUT.-COLONEL E. GUNTER, *p.s.c.*
(late) East Lancashire Regiment.

PREFACE.

THE XIX. Volume of these Reports for 1902 contains 515 pages.

The Preface, which is even more than usually brief, states as a reason for omitting any mention of the Japanese Army that the changes in this are so unimportant that the Report for 1900 as regards that country holds good. The Editor draws attention to those of the forces of Siam, Morocco, Venezuela, and Ecuador. These do not seem to call for reproduction in this *précis*.

The Report on Infantry and Combined Tactics is of especial interest this year, as are also the Notes on Signalling, Wireless Telegraphy, etc.

The Editor mentions the Special Report on TRANSPORT and the Train to be found in Part II. of this Volume. This, it may be remembered, was postponed last year; and in view of the increased importance of the Train Services in modern war, he hopes to continue the Reports under this head next year.

It would have been desirable to translate this portion of the Report, but it is so full, that a separate paper would have been required to reproduce even one-fourth. It is well worth study in the original (pp. 371 to 416). It deals with Railways, Motors, Traction Engines, etc.

In view to the Macedonian rising, the AUSTRO-HUNGARIAN and the BULGARIAN and ROUMANIAN Forces are dealt with in some detail this year in the translation of Part I., and some space has been given to TURKEY, but the organization of the Russian Army having been given much prominence of late in THE JOURNAL is probably well known to our Readers, and space would not admit of its reproduction.

† As heretofore, the German "*Fuss Artillerie*" has been translated "Garrison Artillery," as the nearest present English equivalent.

Any notes by the Translator, as distinguished from those asterisked by the Editor, are marked with daggers and initialled E.G.

† See THE JOURNAL for October, 1901, p. 1188.—E.G.

Army
Corps.

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Military
District

Austrian
Militia ..

Hungarian
Militia ..

* EN

† For
also the Militia

PART I.
ORGANISATION.
AUSTRIA-HUNGARY.

The Peace strength of the Austro-Hungarian Army in 1902 was as under:—

Army Corps.	Station.†	No. of Divisions.	Infantry.			Cavalry.			Field Artillery.					Garrison Artillery.			En-gineers.		Train.			A. Hosp. Corps.
			Brigades.	Regts.	Bns.	Brigs.	Regts.	Squadns.	Brigs.	Regts.	H.A. Batts.	F.A. Batts.	M.A. Batts.	Regts.	Bns.	Cos.	Bns.	Cos.	Regts.	Divisions.	Squadn.	
1	Kracow (Galicia) ...	1 C. 2 I. 1 H.A.	4	9	38	2	4	24	1	4	2	16	—	1	3	12	1	5	—	1	6	2
2	Vienna ...	1 C. 3 I. 1 H.A.	6	14	51	3	5	30	2	6	2	24	—	1	3	11	3	12	1	1	9	3
3	Gratz (Styria)	2 I.	4	7	31	1	2	11	1	4	—	16	—	1	2	9	1	5	—	1	5	3
4	Budapest (Cen. Hungary)	2 I. 1 H.A.	4	8	29	1	3	18	1	4	2	16	—	—	1	4	1	5	1	1	9	2
5	Pressburg (N.W. Hungary)	2 I. 1 H.A.	4	6	24	1	3	17	1	4	2	16	—	1	1	4	2	10	—	1	8	2
6	Kaschau (N. Hungary)	2 I. 1 H.A.	4	7	27	1	2	12	1	4	2	16	—	—	—	—	—	—	—	1	4	1
7	Temesvar (S. Hungary)	2 I. 1 H.A.	4	6	24	1	2	12	1	4	2	16	—	—	—	—	1	5	—	1	5	1
8	Prague (Bohemia) ...	2 I.	4	7	29	—	1	6	1	4	—	16	—	—	—	—	1	5	—	1	5	1
9	Josefstadt (Bohemia) ...	2 I.	4	7	28	2	5	30	1	4	—	16	—	—	—	—	1	5	—	1	5	2
10	Przemysl (Galicia) ...	1 C. 2 I. 1 H.A.	4	8	32	2	5	30	1	4	2	16	—	1	3	12	2	10	—	1	6	1
11	Lemberg (Galicia) ...	2 C. 2 I. 1 H.A.	4	7	34	4	9	54	1	4	2	16	—	—	—	—	—	—	1	1	8	1
12	Hermannstadt (Transylvania)	2 I.	4	6	25	1	2	12	1	4	—	16	—	—	1	2	1	5	—	1	5	1
13	Agram (W. Hungary)	2 I.	4	7	25	—	1	6	1	4	—	16	—	—	1	2	—	—	—	1	5	1
14	Innsbrück ...	2 I.	4	6	25	—	1	6	—	2	—	8	3	—	1	4	1	5	—	1	5	2
15	Sarajevo (Bosnia) ...	2 I.	10	4	34	—	—	2	—	—	—	—	11	—	—	4	—	2	—	1	13	2
Military District	Zara (Dalmatia) ...	—	—	2	1	8	—	—	—	—	—	—	—	1	2	8	—	1	—	—	—	1
	Total ...	5 C. D. 31 I. D. 8 H.A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Regularity ...	—	70	110	466	18	42	252	14	56	16	224	14	6	18	72	15*	75*	3	15	98	26
Austrian Militia ...	—	8 I.	16	38	115	—	6	39	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Hungarian Militia ...	—	—	14	28	94	4	10	60	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Exclusive of a Railway Engineer Battalion of 3 Companies.

† For further details and changes see "Seidel's Armee-Schema," pub. Seidel & Sohn, Vienna, May and November also the *Militär-Wochenblatt*, No. 62, 1902, for a general account of the Austro-Hungarian Forces.—E. G.

Austrian Militia.—Infantry.—Each Corps District includes a Landwehr territorial district, the Corps commander being its commandant also, and the Zara Military District forms its own Landwehr territorial District.

The Militia Infantry of each Landwehr District (excepting that of Zara), is organised in an Infantry Militia Division of 2 Brigades. The Divisions in the Vienna, Innsbrück, and Przemysl Corps-Districts have 4 Regiments, the remainder 5 Regiments. Each Regiment has 3 Field Battalions. The Zara District has 1 Regiment Landwehr of 4 Battalions.

Cavalry.—Excepting in Prague, Gratz, and Zara, the cavalry in each Landwehr territorial district consists of a Landwehr Uhlan (Lancer) Regiment of 6 squadrons. The Innsbrück District has, in addition, 2 squadrons of Tyrolese Mounted Rifles.

The Zara Landwehr District has 1 squadron of Dalmatian Mounted Rifles.

Hungarian Militia.—The Hungarian Landwehr territorial Districts are: (1) Budapest, (2) Szegedin, (3) Kaschau, (4) Pressburg, (5), Stuhlweissenburg, (6) Klausenburg, (7) Agram. The District Commandants act as Divisional Generals.

Infantry.—Each District has 2 Brigades=4 Regiments each of 3 or 4 Field Battalions.

Cavalry.—In Districts (1), (2), and (5) there are 2; in the remaining Districts 1 Honved (Hussar) Regiment of 6 squadrons, altogether 10 Regiments, which are organised in 4 Cavalry Brigades, the headquarters of which are at Budapest, Szegedin, Fürstkirchen, and Debreczin.

The Peace Strength of the Units is as under (approximately):—

Nature of Force.	Infantry Co.		Infantry Battalion.			Cavalry Squadron.			Horse Artillery Battery.				Field Artillery Battery.			
	Officers.	Men.	Officers.	Men.	Horses, public.	Officers.	Men.	Horses.	Officers.	Men.	Horses.	Guns.	Officers.	Men.	Horses.	Guns.
Regular Army ...	4	129	18	520	2	5	166	149	5	122	110	6	4	101	43	4
†Austrian Militia ...	4	129	14	221	2	3	43	31	—	—	—	—	—	—	—	—
†Hungarian Militia...	4	129	18	208	2	4	65	57	—	—	—	—	—	—	—	—

† The Bosnia-Herzegovinian Landwehr are all organised like the Regular Forces. The others approximately so.—E. G.

The Total Strength is about (on the lower peace establishment):—

—	Officers.*	N.C.O.'s & Men.	Horses.	Guns.
Regular Forces ...	14,458	286,014	59,768	1,048
Austrian Militia ...	2,008	27,234	1,588	—
Hungarian Militia ...	2,298	24,596	3,754	—

* Exclusive of Army Medical Corps, Veterinary Surgeons, and Paymasters.

No details regarding strength of Units or total strength in War, are published.

This Autumn (1903) 4 Companies, which had been added to the 4 Bosnia-Herzegovinian Regiments, will be withdrawn from them and re-organised in a special Rifle Battalion.

Guns.—On the 14th August, 1902, the issue of 10-cm. Howitzers (3·95-inch) of 1899 was stopped, and it is expected that a new Field Howitzer will be introduced in 1903.

Maps.—Great attention has been paid in Austria in the past year to the issue of Maps. Besides the issue to all Staff Officers, every Battalion, Squadron, and Battery Commander is to be furnished with a general map of the theatre of war on the scale of $\frac{1}{200000}$, and a special map of the theatre of operations, scale $\frac{1}{75000}$.

Manœuvres.—Combined sea and land operations were carried out from the 1st to the 3rd September on the Istrian Coast in the presence of the Emperor. Debarkations were practised. The 55th Infantry Brigade, 1 Battery, $\frac{1}{2}$ Squadron, 1 Austrian Militia Regiment, and a squadron of the Fleet took part in these.

From the 12th to the 16th September, Manœuvres on a larger scale were held. These were carried out by the 2nd Corps from Vienna, and the 5th from Pressburg, and 1 Division of the 1st Corps from Kracow. Two Militia Divisions and 1 Militia Brigade also joined in.

A West Army, of 2 Army Corps (2 Divisions each), and 1 Cavalry Division, total, 56 Battalions, 31 Squadrons, 108 guns, under the Archduke Franz Ferdinand, manœuvred against an East Army of 1 Army Corps (2 Divisions), 2 Independent Territorial Divisions, and 1 Territorial Cavalry Division; total, 54 Battalions, 36 Squadrons, 108 guns. Engineers, with Bridging Train and Balloon Equipment, were attached to each Army.†

Divisional Manœuvres were held in several Districts, and Cavalry Manœuvres on a large scale with the Territorial Cavalry from Lemberg and Stanislaw.

New Musketry Regulations (provisional) were issued and tried. Distances up to 800 paces (instead of 600 as heretofore) are classed as short, and up to 1,600 paces as medium. Good effect at the latter range is said to be expected against even partially covered skirmishers. 150 rounds are fired by each man in the course of the year, and 500 rounds are given to each Company commander for Field and experimental firing, etc. The construction of the targets has been altered. Most of these now represent skirmishers lying down. There are also targets 2 metres broad representing 3 men, and others 5 men, against which to practise group firing. The target results are registered in diagrams, copies of which are given to the men. The men are carefully classified, and first-class shots and judges of distance receive certain indulgences.

Long-range shooting is now practised in individual firing as well as volley-firing. The concealment of the target and snap-shooting is also practised.

In Field-firing, two sections of equal strength, with an equal amount of ammunition, compete side by side against falling figure targets. One man of the section is withdrawn for each figure shot down by the rival section, and the practice is continued, until one of the sections wins the competition by keeping the Field with the greatest number of men.

† The *Militär-Wochenblatt* gives a full account of these Manœuvres in Nos. 108 to 112 of 1902.—E.G.

BULGARIA (1902).

The Bulgarian Army is formed into 6 Territorial Divisions.

1st, " <i>Sofia</i> ";	headquarters, Sofia.
2nd, " <i>Thracian</i> ";	" Philippopol.
3rd, " <i>Balkan</i> ";	" Slivno.
4th, " <i>Preslau</i> ";	" Shumla.
5th, " <i>Danube</i> ";	" Rustschuk.
6th, " <i>Widin</i> ";	" Wratzka.

Infantry.—Each Division = 2 Brigades = 3 Regiments.

The 1st Regiment = 2 Battalions; each Battalion = 4 Companies.

The 2nd Regiment = 2 Battalions.

The 3rd Regiment = 1 Battalion.

Cavalry.—Each Division contains 2 Squadrons attached of divisional Cavalry.

On mobilisation, 4 Cavalry Regiments, each 4 Squadrons, form 1 Cavalry Division. There is a Bodyguard Squadron in addition. Total, 29 Squadrons.

Artillery.—There are 6 Field Artillery Regiments, each of 3 Field Artillery Brigades, each of 3 Field Batteries = 54 Battalions.

1 Mountain Battery Regiment of 3 Mountain Battery Brigades each of 3 Mountain Batteries = 9 Battalions.

An additional Reserve Battery is formed in each Artillery Regiment.

Garrison Artillery = 3 Battalions of 3 Companies each (besides the Company in Silistria).

Engineers.—3 Battalions each 4 Companies, 1 Telegraph Park, 1 Railway Company, 1 Pontoon Company.

Train.—6 Companies.

Silistria has a special garrison of 1 Infantry Regiment, 1 Garrison Artillery Company, 1 Engineer Company.

The Peace Strength was reckoned last year as 42,650 men and 7,970 horses; but these numbers were not actually effective.

In War, 12 additional Frontier Companies and 1 Cavalry Division of 16 Squadrons are to be formed, and the Army of Reserve is to consist of 3 Divisions = 6 Brigades, 6 Field Artillery Brigades of 3 Field Batteries of 6 guns, and 6 Engineer Companies. Each Infantry Regiment is to at once form a Reserve Battalion, each Cavalry Regiment a Reserve Squadron, and each Field Artillery Regiment a Reserve Battalion.

The War Strength is then to be:—

				Men.	Guns.
1st Line	...	...	...	183,300	378
2nd Line	...	...	...	36,750	108

The War Establishments are to be as follows:—

—	Officers.	Men.	Horses.	Guns.	Ammn. Wagons.	
Infantry Bn. ...	14	1,063	38	—	—	It seems doubtful if these numbers will be available.†
" Reserve ...	10	820	—	—	—	
Cavalry Squadron	5	227	230	—	—	
Field Batt. Art. ...	5	182	159	6	8	
Mountain Batt. Art.	4	241	131	6	—	

Owing to lack of money the annual recruiting contingent of 20,000 men was reduced in 1902 to 18,200 for 3 years.

Manœuvres.—The Shipka Manœuvres, 1902, were the largest yet attempted. The 2nd, 3rd, and 5th Divisions took part in them, and half their ranks were filled by reservists. The attack and defence of the Shipka Pass, as in 1877, was reproduced.

The Grand Duke Nicholas of Russia, the War Minister Kuropatkin, General Dragomirov, and other veterans of this War, attended.

FRANCE.

There are no great changes to be reported in organisation in 1902.††

A 3rd Division of Colonial Infantry was formed, and some other units of Colonial Artillery added.

The formation of the 4th Battalion for the whole of the Infantry, was not completed, nor will it be in 1903.

The issue of a new rifle has not got beyond the experimental stage.

The provisional Infantry and Field Artillery training regulations have now been adopted.

The two years' service bill (with the Colours) has not passed, but it is expected to be got through Parliament in 1903.††

The number of independent *Cavalry Divisions* has been increased to 8 by the formation of an 8th Cavalry Division, Head Quarters Dôle.

The strength and distribution of the French Army remain substantially the same as in 1899, ††† but minor changes in stations, etc., have been made, which are detailed in the Report.

The FRENCH COLONIAL ARMY†††† is according to this now:—

3 Divisions=6 Brigades=12 Regiments=36 Battalions=144 Companies Infantry; 1 Brigade=3 Regiments=12 Battalions of Field

† The details of the Bulgarian Budget for 1902, showing allowance for 2,430 officers and about 43,000 men, were given in THE JOURNAL for February, 1903, p. 222.—E.G.

†† The organisation of the French Army is briefly given in the "*Aide-Mémoire de l'Officier d'Etat-Major*," 1902.—E.G.

††† See Table of Strength and Distribution of French Army in 1899, pp. 1299, 1300, of JOURNAL, November, 1900.—E.G.

†††† These troops are specially enlisted in France for Colonial reliefs.—E.G.

Artillery, 6 Mountain Batteries, 12 Garrison Batteries. Excepting for 8 Batteries Artillery, the establishment sanctioned by the law of the 7th July, 1900, is now completed.

At the end of November, 1902, the following was the distribution of the French Colonial Army in the *Colonies* :—

	French Infantry.	Native Infantry.	Field Art. Batts.	Mountain Art. Batts.	Garrison Art. Batts.
In Madagascar and Indo-China	10 Bns.	18½ Bns.	4	6	5
West Africa	2 "	8 "	—	2	3
Martinique	7 "	10 "	2	3	3
In various other stations	6½ "	3½ "	—	1	4½

Manœuvres, etc.—*Staff Rides* were carried out in each Army Corps and in the District of the Government of Paris. The Colonial Troops were also practised in these for the first time.

The XVIth and XVIIth Army Corps carried out Manœuvres on a large scale near Toulouse under the supervision of General Brugère, Vice-President of the Chief War Council. A Colonial Infantry Brigade and a Cavalry Brigade from each of the XIIIth and XIVth Army Corps took part in these. The new French Infantry and Artillery Training Regulations were tested at these. The accounts given of these are highly favourable to the French Troops and their leaders. Cavalry manœuvres were also held under General von Donop, commanding the Xth Army Corps, and President of the Cavalry Technical Committee, when 56 Squadrons, 4 Horse Artillery Batteries, and some machine gun detachments, or Mounted Engineers, were manœuvred. General von Donop expressed himself highly satisfied with the efficiency of the Cavalry.

The new French provisional Training Regulations were adopted.

New Instructions for Cavalry on Field Service were introduced.

Provisional Musketry Instructions, amending those of 1895, were adopted in November, 1902.

An Army Order of the 23rd April, directed special attention to be paid by the Cavalry to swimming instruction, and the passage of rivers, etc. Narrow footbridges for the men, leading their swimming horses alongside, are favoured, but a portable light bridging equipment is not yet supplied to Cavalry.

The health of the French Army is reported not to have been good during the year, the proportion of men suffering from typhus and tuberculosis exceeding those of other Armies, and the death-rate being three times as great as in the German Army. Measures are to be taken to reduce this, and recruits are to be enlisted at the beginning of October, instead of in the middle of November, so as to gradually accustom them to the harder life the Service entails before the winter months. The population of France has, on the other hand, increased by fewer deaths and more births, so that in 1902 it numbered 39,000,000.

THE GERMAN EMPIRE.

The German Regular Forces are organized in 22 Army Corps,† the stations and peace establishments of which are given in full detail in the Reports. The organisation is unchanged.

No information is published regarding war strengths. A squadron of Saxon (Chemnitz) *Mounted Rifles* was added to those reported in 1901. The strength of these squadrons is: 5 officers, 132 men, 132 horses. There are 17 squadrons now formed, of which 5 form one permanent Regiment, in East Prussia (Posen).

7 *Machine Gun Detachments* were added to those existing in 1901. The establishment of each of these is: 4 officers, 77 men, 54 horses, 6 machine guns, 2 wagons. There are now 13 of these machine gun detachments; one is at Augsburg, in Bavaria. 6 new companies of *Garrison Artillery* were formed from the existing Garrison Artillery Regiment (usually of 2 Battalions of 4 Companies each), and stationed in the Fortresses Bogen, Diedenhofen, and Marienbourg (2 in each).

Marines and Colonial Troops.—There are 3 Marine Battalions, each of 4 Companies.

There is a Field Battery attached to the IIIrd Marine Battalion.

Imperial Defence Troops.—In German East Africa there are:—

—	European Officers.	Medical Officers.	Staff Paymasters.	N.C.O.'s and Eur. soldiers.	Native Officers.	Native N.C.O.'s and Eur. soldiers.	Cos.
In German East Africa † there are—	49	25	1	713	9	614	12
S. West Africa	34	9	—	788	—	187	4 and 1 F.B.R.A
Cameroons	33	9	4	52	—	900	6 1 Art. Det

The German China Force.—This Brigade has been reduced since the 11th December, 1902. There are in:—

Peking, 2nd Eastern Asia Regt., 2nd Bn., 5 Cos. and Hdqtrs.

Langfang " " 1 "

Shanhaikwan " " 3 "

Yangtsu " " 1 "

Tientsin, 1st Eastern Asia Regt., 1st Bn., 5 " and Hdqtrs.

" 2nd " " 1 M.I. Co., 1 M. Gun Det.

" Eastern Asia Mounted Rifles 1 Squadron.

" " Field Artillery 1 Batt.

" " Engineer Co. 1 Co.

" " Field Hospital 1 F.H.

Tsingtau 1st Eastern Asia Regt., 1st Bn., 2 Cos., 1 M.I. Co., 1 M. Gun Det.

† A Table showing the strength and distribution of the German Army Corps in 1899 was given in THE JOURNAL for November, 1900, p. 1303. Some obvious misprints in the Stations require correction, and the 3rd Bavarian Army Corps has been completed since then, but no important changes in organisation have taken place, and our space does not admit of reproducing the Table. Bath's "Distribution of the German Army" (Berlin, 1 M.) gives full details, and, as regards its organisation, the War Schools "Leitfaden" (Heerwesen, Berlin, 2 M.) is the best.—E.G.

The Brigade Head Quarters and Intendence are at Tientsin.

The Commandant of the Line of Communication Troops is at Tangku.

New *Regulations for the Line of Communications in War* were issued on the 14th May, 1902. They do not contain many changes from those of 1887. Details are in the *Militär-Wochenblatt* of the 20th August, 1902, No. 73.

Manœuvres, etc.—Imperial Manœuvres were carried out by the IIIrd Army Corps (Berlin) and Vth (Posen). The 1st Infantry Division of the Guard and 1 Cavalry Regiment of the Guard were attached to the IIIrd Corps, and the 1st Infantry Brigade, 1 Cavalry Regiment, and the Regiment of the Field Artillery School of Instruction joined the Vth Corps for the Manœuvres. Each Corps had, in addition at its disposition: 1 Cavalry Division and 1 Balloon Detachment. The Train Battalions formed the *personnel* and carriage for the provision columns. 16 of these were formed out of 8 Battalions of the Train. Each Infantry Division had 2 Provision Columns attached to it, one being formed by a Regular Army Transport Battalion with its Staff, and the other by mixed hired transport manned by the Army Service Corps.

The Cavalry Divisions had mixed Transport only.

One of the above columns followed its Division, the other filled up from the Field Depôts. Baggage columns were also formed and manned by the Army Service Corps, and followed the Troops, according to the Regulations for Field Service. Four-fifths of the Bivouacking Equipment was carried, one-fifth being requisitioned on the spot.

The Cavalry Divisions consisted of 6 Regiments and a Horse Artillery Brigade, and also a Detachment of Mounted Engineers. They were later on reinforced by 2 Cavalry Regiments.

No other special large Cavalry Manœuvres were held, but Distance Rides, etc., were carried out in the IVth, VIIth, IXth, Xth, XVth, XVIIth, and XVIIIth Army Corps. In the Ist, IXth, and XVIIIth Army Corps, Attack Practice with live shell was carried out by the Garrison Artillery.

Engineer and Bridging Operations on a large scale were carried on at Rastatt between Elbe and Havel.

Landing operations were practised on the Island of Borkum in combination with a portion of the Fleet.

In the XIXth Corps (2nd Saxon) great engineer operations were held between Elbe and Mulde as well as Cavalry Distance rides.

The Bavarian Army Corps also had manœuvres on the Rhine, and Cavalry long-distance rides were carried out.

All the Manœuvres were carried out according to the *Feld-Dienst Ordnung*, and the Staff Rides were usually executed according to Army Orders of the 18-1-1900.†

† The Report under review deals chiefly with changes that have taken place in 1902, or have been ordered. Details of some new measures to be laid before the Reichstag in 1903 will be found in *THE JOURNAL* for July, 1903, pp. 842-6, and of the Budget in the April number, p. 483.—E.G.

ITALY.

The 12 Army Corps have each 2 Infantry Divisions, excepting that of the Rome Military District, which has 3. Their war organisation is as given last year.† The strength of units for war is as follows:—

Unit.	Officers.	N.C.O.'s and Men.	Horses.	Guns.	Ammn. Wagons.	Other Carri'gs.
Battalion	24	1,019	10	—	—	5
Squadron	5	134	137	—	—	2
Heavy Field Battery 9-cm....	4	162	116	6	6	3
Light " " 7-cm....	4	124	92	6	6	3

The total rationed strength is approximately as under if all are called up:—

—	Officers and Men.	
With the Colours	248,111	There are about 1,250 guns with the Regular Forces and 378 with the Militia.
On Furlough	486,290	
Mobile Militia	320,170	
Territorial Militia	2,275,631	
Total	3,330,202	

This shows a slight diminution in the Regular Army and an increase of Militia Forces. It is to be observed, however, that reliable returns are not obtainable, the Government having of late years kept secret particulars of strength, etc. A Battalion is in Crete, and in China 1 Battalion of 3 Companies and 1 Section of Field Artillery, Engineers, Army Service Corps, and Army Hospital Corps.

Three new Artillery Regimental Commands of Garrison Artillery (Coast Defence) in Genoa, Spezia and Messina were organised.

A new organisation of Artillery Units has been effected. The Bersaglieri and Alpine Regiments have been re-arranged as regards commands.

The age of compulsory retirement is fixed as follows:—Lieut.-Generals, 78; Major-Generals, 75; Colonels, 68; Lieut.-Colonels, 66; Majors, 65; Captains, 62; Subalterns, 60.

Manœuvres, etc.—No Manœuvres on a large scale were held in 1902, but the usual Field Manœuvres were practised in all Corps. Practice in Hill-Warfare was carried out from the 15th July to the 15th September in the Maritime Alps and winter quarters were not taken up till the end of October. In January and February winter marches were executed.

The Mobile Militia of the VIIth Corps were called out for exercise. The Cavalry of the 3rd Corps went into Divisional Camp for 25 days and in the 5th and 10th Corps in Brigade for 20 days.

† See JOURNAL, November, 1900, p. 1305; also for November, 1902, p. 1480-81, as regards mobilisation.—E.G.

The Cavalry have been furnished with a lance of new pattern (1900). The Red Cross Field Hospitals and Ambulances took part in the Corps Manœuvres.

ROUMANIA.

The Roumanian Army consists of 4 Army Corps, and are stationed at (1) Crajova, (2) Bucharest, (3) Galatz, (4) Jason, and 1 independent Division, the Dobrudocha. Each Corps consists of 2 Infantry Divisions = 4 Brigades = 8 Regiments = 3 Battalions Infantry and 1 or 2 Battalions Rifles.

The Cavalry consists of 1 Independent Cavalry Division of 3 Cavalry Brigades each 2 Regiments each 4 Squadrons. Total 24 Squadrons. The divisional Cavalry consists of 44 Squadrons.

The Corps Artillery has 4 Regiments = 1 Horse Artillery Battery and 4 Field Artillery Batteries each with a Mountain Battery and 2 Howitzer Batteries (8·5-inch Krupp) additional to the IIInd Corps. There are 8 Divisional Regiments of 42 Field Batteries of 6 guns each. The Dobrudocha Division has 2 Batteries with it besides. There are 2 Regiments of Fortress Engineers = 20 Companies, 2 Regiments Field and other Engineers. Total, 24 Companies of various branches (including Railway, Telegraph, Bridging, and Balloon Sections).

Total war strength:—110 Battalions, 68 Squadrons, 4 Horse Artillery Batteries, 60 Field Batteries, 2 Howitzers,* 1 Mountain Battery, 6 Battalions Engineers. Total about 5,035 officers, 179,583 men, 58,200 horses, 402 guns. The Regular Army may be reckoned as about 200,000 strong, besides the Militia and Territorial Troops, the strength of which is unknown. The Infantry serve 3 years with the colours, the mounted troops 4, and 2 years in the Reserve. The total obligatory service is 7 years under various conditions.

The Infantry Battalions are 1,080 strong at War Strength.

Cavalry Squadrons	178	"	"
Horse Artillery Batteries	184	"	"
Field Batteries	177	"	"

RUSSIA.

No essential changes have been made in the peace establishments of the Russian Army, but its mobility has been much increased, especially as regards the Cossack Troops, by the comprehensive activity of the Military Authorities.

The huge Russian Army really consists of several armies:—1. The European. 2. The Caucasian. 3. The Turkestan. 4. The Amur Military Force.

The first is organised according to the plan of other European Continental Armies. The organisation of the others varies in conformity with local requirements.

The strength of each varies according to the requirements of the situation or of the moment; *e.g.*, the troops are (1) on the ordinary peace footing†; (2) on the higher peace establishment, as in frontier districts; (3) on the war footing, as in Asiatic Russia.

* Thirty-two howitzers have now been delivered, so 1 Battery can be attached to each Corps.

† The ordinary European Peace Establishment numbers are practically the same as given in THE JOURNAL for 1901, p. 1191.—E.G.

There are 13 greater Military Districts, the Transcaspian District, and the Don Cossacks Territorial Region.†

There are 25 Army Corps in Europe and the Caucasus, 2 in Turkestan, 2 in the Amur District.

In war the Reserves called up to reinforce the Field-Troops maintain for the most part the same connection and association as in peace. The Frontier Guards are organised in units on mobilisation, and arrangements are perfected for calling out the Defence Troops of all arms, and the National Reserve (*Opoltschenie*) which is organised in 700 Battalions, 100 Sotnias Cavalry, 80 Field Batteries, 10 Garrison Artillery Battalions, 20 Companies Engineers, etc.

According to a recent estimate the war strength of the Russian Forces may be roughly reckoned as 60,000 officers and about 2,940,000 men with 750,000 horses. The *Opoltschenie* at about 700,000 officers and men and 55,000 horses.

The **Field Artillery** re-organisation, though not complete, has begun. Instead of the former Artillery Divisions, the arrangement will be by Brigades, an Artillery Brigade forming part of an Infantry Division thus:—

3 or 4 Batteries form 1 Regiment.

2 Regiments form 1 Brigade.

2 Brigades to an Army Corps.

Each Field Battery will have 8 guns, so that an Army Corps may have 128 field guns. The commander of a Field Artillery Brigade will be a Major-General. A Lieut.-Colonel commands a Field Battery with 2 Captains commanding half-batteries under him, and 2 Lieutenants.

Mobilisation, etc.—The Infantry Mobilisation Regulations were issued and confirmed in 1902, and provisional regulations for the Transport service of the Reserves were approved. Mobilisation Regulations for the Cavalry and Horse Artillery are being framed. Many experimental mobilisation practices were carried out in 1902, troops and horses of other corps, etc., being utilised instead of calling in the Reserves.

New separate Regulations for the Training of Troops of all arms were issued in August, 1902.

The provisional Artillery Training issue has now been completed. The provisional Regulations for Field Service of 1901 have been under trial for 2 years and have not yet been finally approved.

The re-introduction of the Lance for Regular Cavalry Regiments has now been negated. Steel scabbards are to be substituted for the wooden leather-covered ones in use. Full details regarding the Russian Army and its organisation, etc., are to be found in Captain v. Drygalski's "The Organisation of the Russian Army in comparison with the Austrian, French, German, and Italian Armies," published by Züschwerdt & Co., Leipzig; also Baron v. Tettau's "The Russian Army in Peace and War," Siebel, Berlin. Both are founded on the 3rd edition of Redeger & Gulewitsch, St. Petersburg, 1900.

† The organisation of the Military Districts, Army Corps, Divisions, etc., is as given in THE JOURNAL for March, 1898, p. 299, but commanders, etc., have changed, and the Troops in Omsk, Tomsk, Tobolsk; etc. It is said that 12 Troop trains a day can now be despatched along the Trans-Siberian Railway.—E.G.

SWITZERLAND.

Besides dealing briefly with the small forces of Norway and Sweden, the Report gives an excellent and somewhat more detailed account of the Swiss Army, which we regret exigencies of space forbid our doing more than very briefly epitomising. The Field Army† of the Confederation is organised for peace and war as under:—

Army Corps.	Divisions.	Infantry.			Cavalry.				Artillery.				Engineers.			Remarks.
		Brigs.	Regts.	Bos.	Brigs.	Regts.	Sqads.	Guide Cos.	Regts.	Brigs.	Batts.	Garr'n Cos.	Half Bn	Bridge De'chs	Telegr. Cos.	
4	8	16	32	103 ¹	4	8	24	10	12	24	56	16	8	4	4	¹ Including 3 Rifle Battalions. ² These lower Nos. are the embodied Landwehr of 1st Class.
—	—	4	9	31 ²	—	—	—	—	—	—	—	—	—	—	—	

Every able-bodied Swiss citizen is bound to serve in the Defence Force unless excepted on account of his civil service functions. From his 20th to 32nd year he is in the Elect (*Auszug*), which form the 1st Line, from his 32nd to his 44th in the Landwehr. From his 17th to his 50th he is liable for the Landsturm, if not in the Elect or in the Landwehr. The Landwehr is divided into 2 classes:—Class I. of men between 32 and 39, Class II. of those between 39 and 44. Officers†† are liable to service up to their 48th year. Captains after 38 years of age and subalterns after 34 are passed into the Landwehr.

The annual contingent of recruits for 1902 was 16,467 men. The Total Strength on the 1st January, 1902, was:—

—	Inf.	Cav.	Art.	Engrs.	Cyclists.	A.S.C.	Total.
Auszug ...	115,365	4,742	19,876	5,526	261	1,459	153,649
Landwehr ...	62,547	3,524	13,362	4,431	95	851	88,813

Of the Landsturm 46,368 were armed and partly trained and 283,643 unarmed.

There is an experienced Colonel at the head of each Army Corps, and for war a Commander-in-Chief is elected by the Federal Government. There is a Special Staff Corps of Officers commanded by the Chief of the Staff.

The IVth Corps carried out Special Autumn Manœuvres in 1902 and a Division of the IIIrd Corps formed an opposing force.

† There are 8 Military Districts, to each of which 1 Division is assigned for recruiting and mobilisation purposes. See THE JOURNAL for August, 1897, p. 932. The Landwehr organised in Brigades assist in garrisoning the fortresses, or form part of the Field Army.—E.G.

†† The officers are very well instructed and work hard. The Artillery is especially good. A main feature in the Swiss system is the compulsory training of all boys and lads from their 10th to 20th year in drill and gymnastics, and from their 18th in rifle practice.—E.G.

TURKEY.

The Turkish Army remains much as it was as regards organisation and strength,† and service, liability, recruiting, etc.

The 7 Corps are stationed at Constantinople (Guards only), Adrianople, Salonica, Ersinghian, Damascus, Bagdad, Yemen, with an independent Division each at Tripoli and Hedschas. Each Corps has normally 2 Divisions. That at Salonica has, however, 5, and the Damascus Corps 1 only. Each Division has, as a rule, 2 Infantry Brigades, 4 Squadron Divisional Cavalry, 1 Field Artillery Regiment, (6 Field Artillery Batteries), 1 Engineer Company, 1 Divisional Bridging Train, 1 Field Hospital.

There are 6 Cavalry Divisions of 2 Brigades of 2 Regiments, each of 4 or 5 Squadrons, and a Division of Horse Artillery of 3 Batteries, each 6 guns.

The Corps Artillery consists chiefly of 6 Field Howitzer Batteries. The Artillery *Brigades* usually comprise 2 Artillery Regiments and a Horse Artillery Division of 3 Batteries. In the IInd and IIIrd Corps the Field Artillery Divisions and Mountain Battery Divisions have 4 Batteries each.

There are 8 Regiments of Fortress Artillery.

There are 2 Battalions of Mounted Infantry (riding mules) in the VIth Corps (Bagdad), and a Company of Mounted Infantry in the VIIth Corps (Yemen).

The Redifs (1st Reserve) and Ilaweh (2nd Reserve) are excellent Troops. The Guards, and Ist and IInd (Militia) Army Corps Nizam Troops are armed with the 7.65-mm. (.301-inch), for which the ammunition carried is: by the soldier 120 rounds, in the Battalion Reserve 48; in the Divisional Ammunition Column 132; total, 300 rounds. The Regular Cavalry are armed with Mauser carbines, and carry 30 rounds each in their pouches, 30 more being carried on Regimental ammunition mules. These are increased in war to 50 rounds each.

Arrangements for provision of Krupp Q.F. field guns are being made, and that of heavy field artillery is under discussion.

The War Strength of the units is as follows:—

Unit.	Officers.	N.C.O.'s and Men.	Horses.	Am. Mules.	Guns.	Ammn. Wagons.
Nizam Battalion ...	24	700	62	—	—	—
Redif " ...	24	750	62	—	—	—
Ilaweh " ...	24	750	62	—	—	—
Nizam Squadron ...	6	100	100	—	—	—
Redif " ...	6	50-100	100	—	—	—
F. Art. Battalion ...	4	120	100	71	6	3-9

The discipline and spirit of the Army are excellent, and their courage and fanatical devotion to the Sultan as Head of their Church make them formidable.

† See Summary of Strengths, THE JOURNAL, October, 1901, p. 1193.—E.G.

Mobilisation.—It would require 3 months to mobilise the *whole Army*. But within 3 weeks a force of roughly 380,000 rifles, 11,000 sabres, and 1,044 field guns† could take the Field, while 40,000 Gendarmerie, and 60,000 Redifs from Turkey in Asia, could soon join them.

Manœuvres, etc.—Turkey has been too busy with suppressing revolt in Macedonia, which it is doing with a firm hand, to hold Manœuvres on a large scale, but many of the Redif and Ilaweh Battalions (118 of the latter in the Salonica District) were called out for a month's training, and at the end of 1902 16 Redifs remained embodied. 52 Ilaweh Battalions of the 2nd Military District were also trained.††

A large number of the senior officers of the Turkish Army have now been trained in Germany, and the staff officers are younger and more enlightened than formerly. They, as well as their men, are temperate and hardy. (In the Græco-Turkish War a Brigadier aged 80 was killed at the head of his Brigade, which bears witness to their good stamina.)

PART II.

Reports on the different Arms of the Service, and on progress in the Military Arts, etc.

THE TACTICS OF INFANTRY AND OF THE COMBINED ARMS, 1902.

The Experiences of the South African War.—The experiences of the British Forces in this war have led to two different schools of thought as to the best method of meeting the difficulties encountered in war with modern weapons. One party strives to lessen their destructive effect by wide extension and by *individualising* the combat, while the other, in no way denying these annihilating results, seeks salvation in stricter discipline, the leading of officers in the firing line, and the training of the men, being convinced that every attack must suffer heavy loss, which must be accepted as part of the bargain. Thorough and unprejudiced reports enable us now to see that the failures of the English can partly be explained by their armament not being up-to-date (their shrapnel not ranging far enough, and the number of their high-angle-fire pieces being insufficient), and to the nature of the training of their men, which sufficed for Colonial and savage warfare (*e.g.*, their volley-firing system), but which could not cope with opponents armed with modern weapons. Sometimes, moreover, large bodies of troops were taken by surprise, and suffered considerable loss from Infantry fire at close range as a consequence of inadequate scouting. In other cases, except where they crowded behind cover, the Infantry skirmishing line was too thin rather than too thick, which made it difficult to obtain preponderance of fire.

† As a rule no wheeled carriage is given to Regimental units. The excellent Turkish ponies and mules carry water and entrenching tools, besides ammunition and baggage.—E.G.

†† The numbers of Ilaweh (Reservists) called out in 1903 justify the remarks of the Editor above as to their capacities for mobilisation, while their services in Macedonia testify to their value and discipline.—E.G.

The English Infantry Drill of 1896 gave too little prominence to the fire-fight, and too much to distribution by depth. At Colenso, on the 15th December, 1899, the British disposed of 15,600 men, with 44 guns, against 4,000 Boers with 6 guns, holding, however, an admirable position. Yet the British attacked with only 4,800 men at first, so that the numbers actually engaged were nearly equal. At Spion Kop, of the 20,000 men available at first, only 2,600 men were brought into action against 4,000 Boers, of whom probably about 3,000 only actually fought. Then the British, after their first line troops were used up, reinforced first with 1,000 men, then with 1,500, so that only about 5,000 men were made use of for this fight. Tactical leadership of a high order here would, without doubt, have gained a tactical success, as at Elandslaagte on the 26th October, 1899.

The leadership did not, however, come up to the expectations formed of it. The principle of the envelopment of the enemy, in view to quickly obtaining superiority of fire, was not sufficiently impressed upon the whole Army, and their best efforts were often wasted in useless frontal attacks. Several times a holding force was certainly employed, but it was so weak that no enemy could be deceived by it. The commanders did not appreciate the necessity of the strong, simultaneous attack of masses. The result was that the isolated Battalions sent forward could obtain no success, nor did the commanders understand how to utilise the energies of their Artillery in co-operation with the Infantry.

Both arms played their parts in different acts, not together. This isolated working could only have been compensated by the united action of the Reserves, but, owing to the restrictive nature of the Tactical Regulations, and the peace training of the leaders, any daring use of the Reserve was forbidden. The Reserve was not there to be thrown boldly into the fight, and to nail victory to the Colours, but to guard the troops from defeat, or to cover a retreat.

The experiences and lessons of this war may therefore be thus summarised:—

1. Thorough preparation of the attack by Artillery and Infantry fire working together.
2. The careful use of ground in the leading of the troops, by day or night.
3. Energetic engagement of the foe in front and flank. In the first disposition of the troops they should not be told where the *decisive* attack is to be made. In the extended battle-field of to-day this may follow a flank attack, or the piercing of the centre.
4. Success is only to be attained by the united simultaneous efforts of masses of troops.
5. To win the victory, vigorous use of the Reserves, regardless of consequences, is indispensable. The exhaustion of both sides is in the end so great, that an advance of even a small force after the fight, especially in the dark, almost always stands a good chance of success, and may even lead to decisive victory.

The Cavalry was too weak. It was ill-trained for dismounted action. The horses were exhausted by the voyage, and before they

had time to recover, or to be properly fed up, they were sent to the front. The result was that the reconnaissance was disappointing. Their mounted action was a failure. No greater mistake could be made, however, than to look on the British Cavalry as mere Mounted Infantry, as some in England wish. In this war there were situations on both sides which showed that Cavalry could have been used with effect. If, as a fact, they were not so used, owing to a misapprehension of the true use of Cavalry or other causes, it does not follow that the days of Cavalry attack are over.

General Delarey himself said that though determined Infantry who can shoot well can always drive off a cavalry attack, yet it is quite another thing when the Infantry is shaken and demoralised, and shoots badly. Now bad shooting may be the result of insufficient or bad training, and Cavalry can with confidence attack Militia troops, who always fire too high; and demoralisation may be the result of over-fatigue, privations, previous defeat, etc.

The Instructions for the winter camps of exercise in India, 1902-3, wisely warned the troops that the experiences of South Africa had really only local significance, and it would be a great error to make them of universal application. The tactics employed in South Africa would fail against troops highly trained in European warfare, and always ready to counterattack when on the defensive.

A doubtful conclusion drawn from the South African War experiences is an overestimation of the value of Militia and similar levies.

Von der Goltz says that one lesson to be drawn is that numbers in war are by no means always decisive.

Now, at the end of April, 1900, there were 223,000 British troops in South Africa against 40,000 Boers who still kept the Field. But realise the extent of the theatre of war, the length and vulnerability of the British lines of communication, which must be specially guarded in a poor country against a daring mobile enemy, and the disparity is not so great as it seems.

The experiences of the South African War have confirmed those of the American War of Secession, the Franco-German and Russo-Turkish Wars, etc., that Infantry who can shoot are capable, in a well-prepared position, of withstanding the attack of greatly superior numbers, and the more so in proportion as (1) the Artillery support of the Infantry attack is weak, and as (2) concentration of fire is neglected.

But it must be remembered that in South Africa it was not a mere question of gaining the victory in battle, but of breaking down the resistance of a whole nation firmly resolved to win with its own Militia or to go under. History shows that such an undertaking requires very large numbers (*e.g.*, Napoleon in Spain; the Northerners in the War of Secession, etc.). The eventual employment of a large force by the British seems therefore justified.

The fault of the British lay in their piecemeal mobilisation, and in their continued employment for some time of insufficient forces.

The Report mentions the influence of *psychology in War*, quoting the well-known article in the *Revue des deux Mondes*, of January, 1902, attributed to General Négrier. This dwells forcibly on the fear of the unseen (smokeless powder, etc.), and on the lessening of the personal influence of the officers, owing to the wide extension now necessary between skirmishers, etc., and the difficulty of movement,

so that even an active officer can only really direct a few men on either side of him. The greater the necessity, therefore, for a higher training of the men to a sense of their individual responsibility. "Fear is a disease; its prophylaxis lies in the systematic training of the physical powers and of the will in childhood and youth." The development of the moral force of a nation must be striven for by every means. Officers must be careful not to diminish the initiative and the individuality of the young soldier under the pretence of disciplining him. They can best influence him by carefully instructing him.

INFANTRY AND COMBINED TACTICS IN INDIVIDUAL ARMIES.

AUSTRIA-HUNGARY.—The influence of the new provisional Infantry Training Regulations, which have been nearly a year on trial, is seen in the wider intervals between the several bodies of troops, in the absence of all close formations within rifle range, in the almost exclusive use of individual firing, and in the endeavour to individualise the combat. At the Imperial Manœuvres the spade was little used even in defence. The marching was good. The new Musketry (provisional) Regulations were issued experimentally to one Infantry Regiment in each Army Corps.

The Imperial Manœuvres were held between the March and the Little Carpathians from the 12th to the 16th September, 1902. Two Armies of each 4 to 4½ Infantry Divisions and 1 Cavalry Division were assembled. The Cavalry had a distance of about 33 kilometres (21 miles), and the Infantry about 70 kilometres (44 miles), between them at starting. The Cavalry came into collision on the first day, and on the second day the Infantry for the most part were encountered. The Cavalry scouting was good. The massed Artillery simultaneous action was well carried out; but the most remarkable occurrence was an excellently planned and skilfully executed counterstroke on a large scale by the general Reserves of the East Army, judiciously placed near the outer flank instead of being, as usual, massed behind the centre.

Field Telegraph Detachments connected the Corps Headquarters with the Divisions, and were used in combination with Infantry mounted orderlies.

Cyclists were used as messengers, but not in tactical bodies, as the nature of the deep-rutted roads was unfavourable to their employment.

Motor cars were used for the generals and their staffs, and also for the traction of forage and provision supply wagons.

ENGLAND.—The report gives long extracts from "Infantry Training" and "Combined Training," which need not of course be transcribed here. The difference in principle between the German and the British methods of the employment of machine guns is pointed out, the former distributing these among the Infantry and Cavalry units and permitting their employment singly, which is distinctly forbidden in the German regulations. These keep their Machine Gun Detachments in Batteries of 6 guns, which are held at the disposal of the higher commanders only.†

† There is a separate "Handbook for Machine Guns" in the German Service, which regulates their employment.—E.G.

The distribution of the Infantry in attack is criticised as being like the French, too artificial, for it does not sufficiently take into account the ground or the enemy, and leads to premature disposition of a Force. "*Combined Training*" is characterised as a "*Felddienst und Gefechtsvorschrift*," the latter inculcates the importance of the Fire-fight and the necessity of mutual support therein. It underestimates the possibilities of Cavalry attack, and depreciates the value of the Encounter Battle.

FRANCE.—The provisional "Infantry Training" is being re-written. Provisional Musketry Regulations were issued on the 18th November, 1902, but the principles on which these are carried out are not changed.

The practice of keeping too long in close order within effective range still obtains, ground is not skilfully used, the men fire too frequently standing up, and in skirmishing the desire to form symmetrical lines of advance is prominent; on the other hand, all movements were conducted with praiseworthy silence, signals being used for everything, the attack was methodically arranged, and sufficient time was allowed for the "preparation by fire."

Manœuvres, etc.—The Autumn Manœuvres began with well-arranged exercises in hill warfare in Savoy, carried out chiefly by the "Groupes Alpines" under General Arvers. The necessity of an active defence was well illustrated by a prompt counterattack of the Alpine Division against their opponents of the 28th Division who had attempted a wide turning movement under cover of a holding attack by their advanced guard.

From the 3rd to the 9th September, the XVth and XVIIth Army Corps held manœuvres under the supervision of General Brugère. The latter Corps was strengthened by a Cavalry Division. In the first period an encounter battle was fought. In the second a planned attack, carried out by the combined Army Corps against a marked enemy. General Brugère seems to favour Infantry attacks *en masse*, carried out after thorough preparation by fire and with careful use of ground. Owing to the short distance allowed between the opposing forces little practice in Reconnaissance was given. Many surprises took place, leading to the conviction that the scouting was defective. No cavalry attacks were made.†

In contrast to the views of General Brugère those of General de Négrier demand attention. He favours wide extension, envelopment, and concentration of fire, as the main principles of modern attack. Not numbers, but skilful leading will at the last determine the issue. Under timely mutual support of artillery and infantry fire, the attackers must gain ground by creeping forward with careful use of cover, the main difficulties being the invisibility of the foe, the impossibility of advancing in an upright position, and in the magnetic attraction of any cover afforded. The Cavalry must renounce the charge against other arms and confine its efforts to surrounding the enemy, to pursuit, and to rear-guard action. The Artillery must make use of heavy flat trajectory guns and quick-firing guns of small calibre.

General Kessler, in his "*La Tactique des Trois Armes*," puts forth similar views. He is against bringing about an Encounter Battle unless you are certain of surprising the enemy. He advocates the

† The French Manœuvres arranged for this year are comprehensive. See THE JOURNAL for April, 1903, p. 479.—E.G.

novel idea of so arranging the advance that the enemy shall be from the first surrounded by the converging columns, and enveloped on their deployment for battle. This may lead to an advanced guard being often widely separated from its main body, its Infantry being pushed forward 6 to 12 kilometres (4 to 7 miles) from the latter, the front being covered by Cavalry 12 to 15 miles ahead. A deployed Division would occupy a front of $3\frac{3}{4}$ miles, an Army Corps 5 miles, and the distance apart of columns on the march would be proportionately increased to 10 or 12 miles, if, as with an Army Corps and a Cavalry Division, the latter were 25 miles ahead.

General Langlois' views in his "Conséquences tactiques" are similar, advocating an enveloping attack by fire.

The new edition of the "*Aide-Mémoire*" gives schemes for arrangement in order of march of the columns of an Army Corps moving to battle. Among other arrangements it recommends that each Regiment, Brigade, and Division should send forward a selected Staff Officer to the nearest of the Divisions, etc., in action to report to his Commanding Officer from time to time how the battle is proceeding.

New Regulations for the issue of Ammunition in the Field have been issued, concentrating the whole issue in an Army Corps in the hands of its Commander, instead of as formerly attaching Divisional Ammunition Columns to the Divisions.

GERMANY.—The Army Order of the 6th May, 1902, ordered the trial of the so-called "*Boer Attack*," or Group Tactics. Thin lines of skirmishers instead of thick ones, the men from 6 to 18 paces apart, and half sections and groups approach the enemy as near as possible, being gradually reinforced as opportunities occur, and try and bring a concentrated fire on vulnerable objects. They advance by rushes of 30 to 40 metres when under effective fire, taking care that no objective should be offered to the defenders by a simultaneous commencement of these rushes.

The advantages of the new method are undeniable, as it avoids anything like an artificial scheme of attack, and necessitates individual training of the men. On the other hand, weak-kneed individuals are withdrawn from the eyes of their officers, and it may lead to isolated attacks of small fractions which may be tempted to open fire too soon. In any case the leaders would do wrong to shun, in the fear of heavy losses, the employment of their whole force when necessary. The procedure recommended requires much time for its execution, so is not suited to the Encounter Battle, or where rapid, decisive action is necessary. It would be applicable across open ground, where a defender does not counter-attack. The Report goes at length into the brochure of Lieut.-Colonel v. Lindenau in Appendix 3 of the *Militär-Wochenblatt*, 1902.†

The veteran GENERAL VON BOGUSLAWSKI, in his pamphlet "*Taktische Folgerungen aus dem Burenkriege*," combats on the whole the so-called "attack by groups." He says the necessity for reserving fire until the closest possible range must be impressed on leaders and troops and that keeping Reserves in hand until a crisis has arrived is as necessary now as when Napoleon I. brought the art to perfection.

† Translated in THE JOURNAL, January to March, 1903.—E.G.

GENERAL VON SCHERFF, in his "*Einheits- oder individualisierter Angriff*," upholds his well-known views as to the attack *en masse*, for the total efforts of isolated combats can never, in his opinion, equal the preponderating effect of the simultaneous attack of masses.

Thus we still have in Germany the conflict of tactical opinion, swaying between the united mass attack of General v. Scherff and General v. Schlichting's combination of separate bodies working of their own initiative to attain a common object, centralisation and decentralisation in fact. Excepting in the instance of the above-named Army Order of the 6th May, care has been taken not to disturb the foundations of the well-tried principles of the German Field Exercise of 1889 (though this might be improved in parts).

As regards Combined Tactics, foreign critics admire the unity of German action, the initiative of all leaders, the use of masses of Cavalry and Artillery in battle. Movements in deployed formation or in shortened column of route were little seen at the manœuvres, the troops were equally ready for attack or defence, though perhaps they fought a little shy of entrenching. Foreigners think that the German method of advancing to the attack directly from column of route can best be counteracted by their method of deployment for battle so that extended lines may be opposed to the comparatively narrow-fronted German columns. The far forward Russian advanced troops and the French Army Advanced Guard may however only aim at enabling their commanders to carry out the deployment on favourable ground.

The French Army has for the strengthening of the national self-esteem been schooled in offensive tactics to the apparent neglect of the defensive. The initiative of the leaders does not seem great, and their system of orders seems ponderous. They apparently believe in strong frontal attack, as opposed to the German method of bringing about a decision by the attack of flanking columns.

The Russians seem still to keep to their traditional preference for cold steel and their tenacity in defence and bravery is conspicuous as ever, but it is difficult to form a judgment of this continuously progressive and developing army.

The tactics of the other Powers on the whole oscillate between the poles as indicated above of French and German Military opinion.

The Austrians incline towards the German views, with however less use of their cavalry for attack. System in the attack and well-conducted counterattacks characterise their method. In Italy some traces of national tactics are to be seen. The Battle Tactics of the British Army, influenced by its recent experience, recede more and more from Continental practice. They renounce almost entirely the Encounter Battle and look on their Cavalry as Mounted Infantry, which they cannot entrust with a part in the drama of the battle-field.

Manœuvres, etc.—Imperial Manœuvres† were held in the neighbourhood of Kalau, between the IIIrd and Vth Corps.

† Over 2,000 officers, 50,500 men, and 2,600 and 150 carriages were conveyed by rail for the German Imperial Manœuvres of 1902, of which a vivid description, characterised by his picturesque and stirring writing, by "Linesman," was published in *Blackwood's Magazine* for November, 1902, p. 714. A detailed German account is in the *Militär-Wochenblatt*, Nos. 93 to 104, November, 1902, in which good clear maps assist in understanding the successive "situations."—E.G.

Infantry advanced independent detachments (called Jagd commandos) were pushed far forward in support of the Cavalry at defiles. There is the danger in this of the Infantry being so fatigued as to be unable to fulfil their object if suddenly attacked by active Cavalry or Mounted Infantry who can shoot well. Advanced Cyclist Detachments, on the other hand, answered well. They did good service in scouting, etc. One officer cycled 164 miles in the 24 hours. The Mounted Engineers with the Cavalry Divisions will probably have cyclists attached to them.

Machine Gun Detachments were used with the Cavalry Divisions, acting with Horse Artillery, in the preparation of the attack and in pursuit.

The Balloon Battalion detached sections with each Corps, and these were able to observe the enemy's dispositions at distances of from 6 to 12 miles. Reports were transmitted during the action on cuttings from maps and separate sketches, showing the plans of assembly of the troops, their direction of march, the extent of their positions, and of their outposts, etc.

The Braun-Siemen's flash telegraph was used with success.

A messenger pigeon section of 1 N.C.O. and 3 men was attached to each Regiment of Cavalry.

The Corps Telegraph Battalion kept up communication between Corps and Divisional Headquarters.

New "Regulations for the Organisation of the Lines of Communication" were issued on the 14th May, 1902. Regulations for the treatment and training of war dogs have been issued. Two or three dogs per Company (12 per Battalion) are allowed.

RUSSIA.—The great Russian Manœuvres of 1902 were held in September, South-West of Kursk.† A successful Southern invading Army, advancing across the Dnieper towards Moscow had a right flanking force marching for its protection from Kiev to Kursk, under command of Lieut.-General Kuropatkin (Minister of War). A Moscow Army, under command of the Archduke Sergius Alexandrovitch, was covering Kursk. Each Army had 3 Army Corps and 1 Cavalry Division at disposal, the Army Corps consisting of 2 Infantry Divisions and 1 Cavalry Division. But the latter could be placed directly under the Army commander in each case, and employed as independent Cavalry. Each Infantry Division had a *Sotnia* of Cossacks attached as Divisional Cavalry.†† For these Manœuvres the Cavalry Divisions were separated from the Army Corps commands, and 1 Cavalry Regiment of 6 squadrons was given to the Northern Army Corps, and a Cavalry Brigade of 2 Regiments=6 squadrons to those of the Southern Army as Corps Cavalry. Entrenchments were made great use of even by the attacking force. The defenders' position was $3\frac{1}{4}$ miles long, and was strengthened by trenches, lunettes, and obstacles, and artillery sunken emplacements. It was, in short, a fortified position unassailable without Field Howitzers or heavy guns making use of high-angle fire. It was attacked in front, the Cavalry Divisions being finally led against the flanks and rear at the same time. The attackers induced the defenders to make use of their Reserves to repel an attack on a remote flank, while they pierced their

† For details see *Internationale Revue*, December, 1902.

†† As a rule there are 6 *Sotnias* in a Cossack (Cavalry) Regiment, and 4 Regiments form a Cossack Division.—E.G.

centre, in good old-fashioned way, with 2 Army Corps, after driving back their attempt at a frontal counterattack.

The Northern Army, however, made successful raids against the communications of the Southerners, news of their success being safely conveyed party by pigeon post, partly by well-mounted officers.

These flying detachments laid ambushes in woods, and attacked the Station Korjenjewov, destroyed telegraphs, etc., so that it required 12 hours before it was again got into working order. Seventy transport wagons and many transport officials were also captured. Another flying detachment captured 350 wagons, and many staff and other officers. These flying columns communicated constantly direct with their Army Headquarters.

Cyclist detachments for scouting and fighting purposes have been given up, their use being confined to orderly and messenger work, for which purpose they are armed with revolvers only.

CAVALRY TACTICS.

Two events, the great riding competition at Turin in June, 1902, which attracted riders from Austria, Belgium, France, Germany, Italy, and Russia, and the Belgian long-distance ride from Brussels to Ostend of 82 miles, on the 27th August, 1902, excited much interest in Continental Cavalry circles.† A French officer, Lieutenant Madamet, 13th Dragoons, won the latter event, taking 6 hours 55 minutes. Three other French officers came next in order. Out of 60 riders, who took part in this competition, 29 only reached the goal. The winner made much use of the gallop, but never for more than $3\frac{1}{4}$ miles at a time, then *walking*, and for a few minutes leading his horse. On the second day after the ride, he rode his horse in the riding school before the International Committee, when it appeared quite fresh. His horse was 12 years old. The following appear to be some conclusions to be drawn from this long-distance ride:—

100 kilometres ($62\frac{1}{2}$ miles) is the longest distance a horse can be ridden at the rate of 20 kilometres ($12\frac{1}{2}$ miles) an hour. For longer distances the rate of 10 miles an hour must never be exceeded, and if it is to last for 10 hours, then 9 miles an hour.

The English thoroughbred is the best for rapid long-distance rides, and the English-Arab half-bred comes next.

The age of about 10 years is about the best for endurance.

Horses must be watered as often as possible on the journey to make them sweat freely, which checks blood poisoning.

As regards the riders, those 30 years old and over proved more enduring than the younger men.

Mass Tactics.—The mass attacks of the Prussian Cavalry under H.M. the German Emperor at the Manœuvres of 1902 has been much criticised. The Russians made great use of their Cavalry in great attacks upon the other arms of the Service at their Kursk Manœuvres. The lance question is much discussed in the French and Austrian Armies. In 1866 and 1870 neither the Austrians nor French were

† The *Revue de Cavalerie* of 13th October, 1902, has an article on this.
—E.G.

masters of this weapon. The former struck with the lance instead of giving point, then threw them away in the *mêlée*, and fought with sword and pistol. The French threw them away before the fight, and on the Loire armed themselves with rifles. The German Uhlans, on the other hand, engaged successfully with the lance in both campaigns, and were convinced of the superiority of this weapon. They also armed themselves with the Chassepot on the Loire, but did not on that account throw away their lances.

In the Cavalry action at Königgrätz, the swords of our Light Cavalry proved to be of little use, and it was only when the 4th and 11th Uhlans came into action that it was decided in our favour.

The arming of all our cavalry with the lance gives the men that feeling of superiority which augurs success.

In Russia, however, 60 per cent. of the Cavalry Regimental commanders voted for the abolition of the lance, which is now being carried out.†

ENGLAND.—The Report discusses the Remount question, and the conversion of the Imperial Yeomanry into Mounted Infantry, but has nothing to say about the Cavalry proper, as no Cavalry Manœuvres or Manœuvres of the combined Arms took place in 1902. It draws attention to the want of officers and the measures taken to induce Militia and Yeomanry officers to enter the Regular Cavalry. It mentions Mr. Goldman's book, "With the Cavalry in South Africa." The *Internationale Revue*, in its Appendix No. 30, is said to contain a good article about the projected reforms in the British Army.

The practice of keeping the Cavalry recruit 2 months at dismounted drill before he gets on a horse, and 6 to 8 months before he fires a shot, is commented on.

FRANCE.—In August, 1902, the French Cavalry received an excellent little book, *Instruction pratique sur le service de la Cavalerie en Campagne*. In part II., the assembly and fighting formations of the Triple Alliance Armies are given,†† and in part III. the work of Cavalry in the field.

Much attention is paid to practice in swimming and in crossing rivers. Experiments were tried with portable bridging apparatus. Each Cavalry Regiment is given a 2-horsed wagon for the necessary material, which weighs 1,200 kilos (about 23½ cwt.). A narrow foot-bridge can be thrown on, which the men cross carrying the horse equipment, and the horses swim alongside guided by them. Light guns and carriages can be towed across on rafts made out of the same material and small folding boats. In one system, the Donop, these weigh 35 kilos (77 lbs.). In the other, steel Creusot light boats weigh

† A *précis* of the article by Major-General v. Czerlieu, of the Austrian Army, "The Lance as a Weapon of Cavalry," was given in *THE JOURNAL* for January, 1903, p. 39.—E.G.

†† It would be of interest and of use in case of war if similar hand-books were prepared in our Intelligence Branch for the chief Armies, and kept up-to-date, to be issued in case of necessity. Study of the Tactics of your opponents (or *possible* opponents) is essential to tactical success.—E.G.

about 80 to 90 (209 lbs.). The steel boats proved more durable, and are easier put together, and it is probable they will be adopted.

A Bridging School for mounted corps is to be established on Poissy-sur-Seine, near Versailles, for the theoretical and practical instruction in throwing and constructing portable bridges, etc.

Manœuvres, etc.—Great Cavalry Manœuvres were held North-East of Orleans from the 14th to the 24th August, 1902, under General Donop, who conducted them, as in 1901, with great skill and judgment. General Donop promises success from Cavalry masses surging down on Infantry and Artillery. Generals de Négrier and Kepler, like Lord Roberts, hold that Cavalry, strengthened by Artillery and machine guns, should sweep round the flanks, and thence roll up the enemy by fire, the Cavalry being used for pursuit, etc.

The dangerous zone is to be crossed in extended order by groups, which unite at the next cover that offers. Combats with hostile Cavalry are to be avoided even in Reconnaissance.

These views are put forth in the *Revue de Cavalerie* for July and November, 1902, "*Nouvelle Tactique de la Cavalerie*," etc., but are combated in the same periodical for November, "*L'Evolution de la Cavalerie Moderne*," which warns against drawing false conclusions from the South African War, and the degradation of Cavalry to Mounted Infantry.

In the French Army Manœuvres, the Corps Cavalry and Corps Cavalry Brigades took part, and for 2 days the XVIIth Army Corps had the 1st Cavalry Division at its disposal. The country was heavy, and the Cavalry found no opportunity for attack.

Opinion in France, as well as abroad, is unfavourable to their Cavalry. The men are said to be heavyhanded, and to be wanting in love for and understanding of their horses, both in the saddle and in the stable. The horses were badly trained, and in many cases did not stand fire well.

Both officers and men are said to be unskilled in outpost duties, and the leaders wanting in initiative.

An English officer criticises their Reconnaissance and Scouting, and General Brugère made known his displeasure at their performances.

Germany.—In 1902, great Cavalry exercises were held in the IIIrd, Vth, and XVIth Army Corps, the A, B, and C Cavalry Divisions taking part, as well as another Cavalry Division, made up of the 7th and 8th Cavalry Brigades. Each Cavalry Division had a Horse Artillery Brigade and a detachment of Mounted Engineers attached to it. On the 13th and 14th August, H.M. the Emperor led the A Cavalry Division against that of Lieut.-General v. Kleist.

The Report proceeds to describe in detail the part played by the Cavalry Divisions in the Imperial Manœuvres in 1902, illustrated by some clear sketches, which give a good idea of the Cavalry formations as they scarcely depict the other arms. We have, of course, no space to translate this.

In the *Jahrbücher für die Deutsche Armee und Marine*, for February, 1902, an article setting forth the necessity for more Cavalry in the German Army was published by Lieut.-General von Pelet-

Narbonne. The chief points of this have been already given in *THE JOURNAL*.†

Russia.—Swimming practice was successfully carried on in July and August, 1902, in the Warsaw Military District, the troops crossing the Vistula, the Wantic, the Bug, and the Narew. At Dobrzyn, where the Vistula is 1,000 metres wide, favoured by a sand-bank, which formed an island about midstream, a squadron crossed over to it in 45 minutes, the horses swimming, the men riding, leaning forward on their horses' necks. After 20 minutes rest, the other branch of the river was crossed in like manner in 45 minutes. Again resting, the squadron re-crossed to the left bank.

This is contrary to the usual practice in the Russian Army, where the horses are usually off-saddled for swimming more than a short distance.

At the Russian Imperial Manœuvres†† the 10th Cavalry Division, under General Bibiker, greatly distinguished itself in its attack on the Moscow Army, at Djakonowo, when it put out of action an advanced guard with 16 guns, and again, when the Moscow Army retreated, it surprised and cut up its rearguard. The energetic action of the Russian 1st Cavalry Division is in striking contrast with that of the French and Austrian Cavalry at their Manœuvres.

The Reconnaissance Duties of the Russian Cavalry of both sides seem to have been efficiently carried out. Good use was made of the pigeon post.††† Each Cavalry Division and each advanced guard took homing pigeons in baskets with them, and these rapidly carried messages back to their stations, with which the main body was connected by field telegraph during their advance. The Divisional Field Telegraph carried 15 versts (nearly 10 miles) cable to connect them with the nearest telegraph station.

FIELD ARTILLERY TACTICS.

Austria-Hungary.—At Zurndorf, near Pressburg, Field-firing was carried out by the Field Howitzer Battery of the 5th Corps Artillery Regiment. It had six 10-cm. (3·93-inch) Howitzers and three Ammunition Wagons. The experiments made were considered satisfactory, 36 shots were fired per minute and 50 per cent. of hits were recorded on the target of 2 square metres area. After this, marches of about 27 or 28 miles daily up to 1250 miles, which were from time to time interrupted for firing practice. This Field Howitzer proved to possess all the qualities of accuracy, simplicity, rapidity of fire and general utility for war purposes that could be expected.

The so-called war practices are now carried on in Austria as in France and Russia. They have been demanded in Germany by some military writers also, but the *Militär-Wochenblatt*, in its No. 72 of

† See *JOURNAL* for April, 1903, p. 486.—E.G.

†† An account of these Manœuvres is to be found in the Austrian *Streffleur*, November, 1902.—E.G.

††† It is to be hoped that our Authorities will not give up the experiments made with homing pigeons as messengers in a kingdom where so many are kept and utilised.—E.G.

1902, says that though instructive to Officers and N.C.O.'s it is open to the objection that young soldiers are likely to be unfavourably impressed by the annihilating effect of the enemy's fire as represented, which would rarely occur in action, *e.g.*, within 6 minutes the battery was supposed to lose 1 officer, 6 non-commissioned officers and 10 men, at 2,550 metres from the enemy.† There was, however, some delay in the Battery opening fire after finding the range. The quantity of ammunition required to make such practices of real utility is another objection.

At the Imperial Manœuvres the Field Artillery won much praise from the Emperor of Austria for their mobility and the decision and aptitude with which the units were handled. The frequent massing of the guns, the united fire action, and the skilful concentration of fire on an indicated common objective merited high encomium.

The Field Batteries had some 8 some 4 guns, the Horse Artillery Batteries all 6 guns. It is objected that this practice of only having 4 guns per battery at manœuvres leads to false estimates of space required, time of movement, etc. As Austria with her new armament will fit out the Field Batteries with 6 guns this seems reasonable.

England.—The Report gives copious extracts from *Field Artillery Training, 1902*, but does not comment upon these. It also gives some extracts from the Artillery portion of *Combined Training and Infantry Training*. Neither need, of course, be repeated here.

France.—The Reports of the conduct and working of the French Artillery in the last Autumn manœuvres show that efforts were made to apply the principles of the new Artillery training regulations, but also that much uncertainty was felt as to the correct procedure to be adopted where the regulations allow a choice in certain cases. This again confirms former experience that some time must always elapse before revolutionary changes are understood, and officers and men get to know how to apply them.

Besides the massing of Artillery in positions at the great manœuvres, the dispersion of guns was practised at the lesser manœuvres, where the ground admitted of this. Not only was distribution by single batteries carried out, but distribution by sections was often observed, and in some cases single guns were made use of. Two distinct parties argued in the French press in favour on the one hand of concentration of guns, and in the other of their dispersion. The advocates of the latter say that the utilisation of the folds of the ground for the smaller artillery units and sub-units is not sufficiently considered. In some cases, however, 400 to 500 metres interval was left between batteries or groups of guns, which made united fire action impossible.

Sections and even single guns were sometimes pushed forward to find the range. The remaining Battery or Artillery Brigade guns which were to open fire from the positions were often kept back at first. Again, instead of several batteries simultaneously opening fire on one indicated objective, single batteries were gradually brought into action

† This seems a strange objection. The more realistic military exercises are made the better, as a rule, do young soldiers like them. Is it to be supposed that they expect to be fired at without being killed? The effect is probably exaggerated to give more practice in working with fewer numbers.—E.G.

for this purpose, the idea being to diminish by every possible stratagem the effect of the enemy's fire. As regards the driving, it is said on the whole to have been satisfactory. But some think the changes of position were not made quickly enough, and that the Artillery of the Main Body was too slow in coming up to the support of the Advanced Guard when engaged. The endeavour to conceal the guns often led to their being kept too far behind the crest of the hills and the running of the guns taking some time, it was often late before they came into action to repulse the Infantry attack, so that the favourable moment for their full effect was often lost. Where, on the other hand, they were close to the crest, they were well concealed as long as they were silent, but the moment after they opened fire clouds of dust betrayed their position.

Eye-witnesses bear testimony to the constant efforts of the Artillery to work in with the other arms and especially to support their Infantry. The incorporation of the Artillery in the Divisional Commands will, it is hoped, enhance this mutual support and co-operation.

In France Batteries of 4 guns with their ammunition wagons and the 1st Line Ammunition Reserve were used at the manoeuvres, so as to give practice in the choice and occupation of positions. This is useful, for it shows the difficulty of occupying positions with Batteries at war strength, and of changing position.

The Report of Lieut.-Colonel Tariel, who commanded the French Field Artillery in the China Expedition, has been much discussed. He had three 75-mm. (2.95-inch) Field guns, 550 men, and 518 mules. This officer praises the new guns much. The Commander of the French Troops in China said the gun overcame all the difficulties of piercing cold, burning heat, pouring rain, in action and on the march, without being any the worse. Moreover its shooting performances were brilliant. If we look closely into the matter we find that the Detachments of these 75-mm. batteries were all picked men from the School of Gunnery in Poitiers.

Owing to their greater endurance in the climate of the Far East mules were used for traction, but later the officers were given horses or ponies.

The first great test was the march of a Section through very heavy country with many watercourses running through it. An icy wind was blowing thick clouds of dust about. The day's march varied from 22 to 25 miles. On the march back a morass, 4 miles wide, had to be crossed in which the gun wheels sank up to the axles. The 80-mm. (3.93-inch) gun was found as mobile as the other. Careful inspection after the march revealed no damage done. But the provision and baggage wagons were often upset. The mules often succeeded in drawing the guns along where horses had failed.

On the whole the shooting of the 75-mm. Q.F. gun was very effective, but of course the batteries were not opposed to modern artillery or to rifle fire.

The Mélinite high-explosive shells seem to have had little effect.

Germany.—On the 28th August, 1902, official "*Instructions for war practice with troops of all arms with heavy Field Artillery attached*" were issued. Their object is to make the commanders of troops of all arms well acquainted with the use of heavy Field Batteries, and to give them opportunities of practising the Attack and Defence of Positions as far as possible as in war. The practices are to

last 2 or 3 days. No marked enemy is allowed, but the units employed are to be at full strength.† If live shells are to be used, the time when the defenders are to quit the position, leaving targets to be shot at, is to coincide with the tactical situation. The "preparation of the attack" is to be made a matter of special importance, for on this the result of the fire-fight depends. This preparation includes the co-operation of all arms in the reconnaissance of the position, concealed approach to the position, arrangements for united action of Field and Heavy Artillery, special instructions to officer commanding the Artillery, according to the tactical situation, etc. The defenders are just as much concerned in practising the prevention of thorough reconnaissance by the attackers, as the latter are in effecting it. For the latter, small detached sketches of certain points of the position, as accurate as circumstances admit of, are often more useful than more extensive but less exact reports of the whole position, provided the sketches show whence they were taken.

Last year, these field practices with live shell were carried out in three Army Corps.

Both calibres of our guns proved to be suitable. The Light Field Howitzer especially showed that in the attack on entrenched positions it thoroughly fulfils its object. The efficiency of the Field Howitzer batteries increases year by year with the increase of the knowledge of their capabilities by officers and men.

The Report goes into technical matters as regards time and percussion shrapnel, the effect of shields for guns, etc., which we have not space to translate. It says the higher leaders showed great skill at the great Autumn Manœuvres in the management of masses of guns, which were, whenever possible, concentrated in the largest units. Where, however, exigencies of ground made it imperative, the Artillery were also brought into action in small groups, efforts being in this case, however, made to arrange for unity of fire action.

Field Artillery practice with live shell was carried out in the winter months only.

Italy.—The Report gives long extracts from the Italian "Field Artillery Training" book, issued at the end of 1901, for the new 75-mm. steel gun, and commends highly the Italian practices for concentrating the fire of several batteries on small objectives, and for rapid change of target, etc., but these are too technical to be transcribed in this short *précis*.

Russia.—The Field Artillery at the great Kursk Autumn Manœuvres generally came into action massed between the frontal and flank attacks. Single batteries, however, accompanied and supported the Infantry in their attack, even crossing streams in which the muzzles of the guns were under water for this purpose. In Russia, the whole of the Field Artillery is allotted to the Infantry Divisions, so the connection is a close one, and this leads to rivalry in keen mutual support. Infantry at once hasten to the support of any threatened Artillery, and the nearest Battalion always detaches men at once to help the guns forward if in any difficulty, and they also

† It is most desirable that our Authorities should imitate this excellent rule. All tactical training, from recruit squad skirmishing practice to Divisional and Army Corps Manœuvres, should be carried out with a living opposing force, and no "marked enemy."—E.G.

willingly dig any gun-pits, etc., they require. The Inspector of Artillery reports that the Artillery practice is on the whole satisfactory. The Report notices the tendency of modern Field Artillery Tactics to avoid the Artillery duel, and using the Ammunition against the hostile Infantry.

ARTILLERY MATÉRIEL IN 1902.

General.—The question of the Q.F. field gun is practically decided in favour of the barrel-recoiling gun. As the barrel, after firing, returns to its position before firing, the gun has not to be laid afresh, so more rapid fire is attainable. The gun detachment can also be better protected by the adaptation of steel shields to the gun. These will, however, have to be made thicker if steel bullets for shrapnel, etc., are generally adopted. Small shells of 2-inch calibre are also spoken of as likely to be used against shields. Aim with these would be difficult, and it is doubtful it would necessitate a diminution in the amount of shrapnel carried, which is so effective against Infantry. It is, therefore, probable that where Q.F. barrel-resisting field guns are adopted, shields will also be carried, though of course they will be heavier. The ammunition boxes of the ammunition wagons can be steel-plated for the protection of the ammunition men.

In Siege and Fortress Artillery, Q.F. barrel-recoiling guns and Howitzers are also being introduced.

Quick-loading naval guns are increasing in calibre up to 28-cm. (11-inch), and Coast Defence Artillery up to 30·5-cm. (12-inch).

Machine guns, as an auxiliary armament to a field force, have increased in importance. "Pom-poms," which played their part in the Boer War, are, on the other hand, not much taken up in European Armies, owing to the small effect of their single shell, and to the difficulty of observation.

ARTILLERY MATÉRIEL IN INDIVIDUAL STATES.

Austria-Hungary.—A new light Field Howitzer and a mountain gun have been added to the existing armament. The Field Howitzer of 1899 is a 10·5-cm. (3·96-inch), the barrel is of Thiele's improved steel bronze, with the Nemetz eccentric-screw breech action. The carriages have the spade attachment. They carry common shell, shrapnel, and case, with metal cartridge cases. The common weigh 14 kilos (30 lbs.), the shrapnel 12 kilos (26 lbs.). The highest muzzle velocity is 984 f.s., the lowest 492 f.s. The weight of the Howitzer when firing is about 18½ cwt.

The mountain gun is also of steel bronze. Its calibre is 7-cm. (2·76-inch).

The 15-cm. (5·95-inch) Battery Howitzer is the chief weapon of the Heavy Artillery. The Ecrasit high-explosive shells weigh 85 lbs., the common 70 lbs., the shrapnel 81 lbs., the case 58 lbs. The range with common is 7,200 yards, with shrapnel 5,100.

France.—The Field Artillery and the Corps Horse Artillery are armed with the Schneider-Creusot 75-mm. (2·95-inch), model 1897, Q.F. field gun. The Horse Artillery of the Cavalry Divisions, and the Mountain Batteries, still have, however, the 80-mm. (3·15-inch) of

1877. The Heavy Artillery of the Army, worked by the Garrison Artillery, is the 155-mm. (6.1-inch) short gun, which in mobility and handiness is far inferior to our (German) heavy Field Howitzer.

The details of the new Q.F. field gun are still imperfectly known, though the issue of "provisional instructions for practice" with it to a certain extent lifted the veil concealing them. The weight of the shell is probably about $15\frac{3}{4}$ lbs.,† and the muzzle velocity 1,706 fs. The weight of the whole gun is probably about $20\frac{1}{4}$ cwt. The barrel is about 35 calibres long, and has the eccentric-screw breech action of Nordenfellt. Owing to the difficulty of quickly trailing right or left after being laid the gun is not suitable for the Cavalry Divisions. Each of the 4 guns in a Battery has an ammunition wagon to its left rear in action. Each gun and wagon has a No. 1 and 6 gunners. The ammunition carried is shrapnel, with a small proportion of Mélinite shell. There are 12 ammunition wagons with the Battery. The gun and carriage each have 24 rounds, the ammunition wagon 72 rounds. There are 36 Mélinite shell per gun, percussion-fused. The short 15.5-cm. heavy gun is a steel gun 15.4 calibres (about 2.9 inches) long, weight about $20\frac{1}{4}$ cwt. The whole weight of the gun and carriage is about 3 tons $18\frac{1}{2}$ cwt. It carries common shell weighing 88 lbs., Mélinite shell of $94\frac{3}{4}$ lbs. weight, and shrapnel weighing 88 lbs. Its extreme range is about 7,230 yards. The machine guns are of the Hotchkiss pattern.

Germany.—Germany has still only the Field gun of 1896 and the Light Field Howitzer of 1898. The Heavy Field Howitzer worked by the Garrison Artillery would be with the Field Army chiefly for use against entrenched positions. The Heavy Artillery also has the 10.5-cm. gun, the long 15-cm. gun, and the 21-cm. field mortar.†† The 10-cm. is a Q.F. gun and uses metal cartridge cases. It ranges up to 11 kilometres (about 7 miles), but is a heavy piece.

Regulations for the service, etc., of machine guns were issued last year. The carriage was a difficulty now apparently overcome. The gun rests on a kind of sledge mounting that can be drawn along the ground or carried. From this it can fire over different heights. The sledge mounting can also be raised upon a wheeled carriage and fire from that. There is a four-horsed limber for the carriage. For the cavalry machine gun a special travelling carriage is provided, but it is usually dismounted for firing so as to keep concealed. The single machine gun is considered equal to an Infantry half company (*Zug*).††† Observation is easier and precision greater than with the rifle. The machine gun is an auxiliary arm which, with its fire-power and great mobility, should support the other arms in all phases of a fight. But these others are by no means to be replaced by them.

The question of the Q.F. Field Gun is a burning one. Not only has France outpaced us (Germany) with its new armament, but Russia is also pressing forward to the goal of modern quick-firing Field Batteries. Other smaller States are also thus arming. With us

† The reader will notice the difference in the details as reported last year.—E.G.

†† Details were given of these in THE JOURNAL for February, 1900, pp. 155 *et seq.*

††† Though not the exact equivalent, the British half Company at War Strength is nearly equal to a *Zug*.—E.G.

(Germany) experiments have taken place with unpublished results. A barrel-recoiling carriage will probably be adopted, to which the gun will have to be fitted somehow. The carriage is to be provided with 3-mm. (about $\frac{3}{32}$ -inch) steel shields. The adaptation of this Q.F. field carriage could be carried out in a comparatively short time and at no very great expense. Then we should gain time for the thorough study of the highest and latest form of Q.F. Field Gun.

The Exhibition at Düsseldorf in 1902 showed the present condition of German private manufacturing firms as regards Artillery. It lay chiefly between Frederick Krupp, of Essen, and the Rhine Metal and Machine Factory, at Düsseldorf, generally called the Ehrhardt firm. Krupp showed spade attachment and barrel-recoiling guns side by side. Ehrhardt only showed barrel-recoiling guns of 7.5-cm. calibre (2.9-inch). Much faith was placed upon high shields, which folded up when travelling and formed the backs and sides of the axle seats. Lieut.-General v. Reichenau, the technical adviser of the firm, has constructed a practical ammunition wagon which, being armoured, afforded cover for the ammunition men. This is intended for the 1.95 inch gun. It only fires shells weighing 2.1 kg. (4.6 lbs.) loaded so that it bursts into 100 fragments. It has a muzzle velocity of 2,133 f.s. Even with much armour-plating (the wheels of the limber carry shields) the total weight is only 15½ cwt., so can easily be worked into position by the gunners. The designer hopes with this gun to cope with those of larger calibres.† Lieut.-General von Reichenau thinks that shrapnel are not effective enough, hence his small shell with many fragments. Most Artillery officers disagree with him.

The experiments with steel shrapnel led to the adoption of steel shields of increased thickness up to 6 mm. (about $\frac{1}{4}$ -inch), which latter v. Reichenau thinks thick enough.

Great Britain.—In the House of Commons the War Minister spoke favourably of the Ehrhardt guns purchased in Germany during the South African war. The British Artillery Armament has not yet, however, been changed. Lately a 7.6-cm. (2.99-inch) barrel-recoiling Q.F. Field Gun with a muzzle velocity of 1,708 f.s. has been tried. Maxim Machine Guns with galloping carriages have been adopted for use with Cavalry. They carry shields. For the Infantry Machine Guns a sort of cart-carriage drawn by 1 horse is still used.

Italy.—The Horse Artillery Light Field Gun was to be replaced in 1902 by the 75-mm. (2.95-inch) steel gun, Mark 75A; the Heavy Field Batteries have still the 9-cm. gun. Experiments are being made with Q.F. Field Guns and it is probable that a barrel-recoiling gun will be adopted if matters work out favourably, then the present 75A guns with their spade attachment chain-brake carriages will be relegated to the movable armament of the fortresses. The Shrapnel weighs 14½ lbs. and carries 320 bullets, so it is a powerful weapon. It ranges 5,120 yards. There are 32 rounds in the gun and limber, and 96 on the ammunition wagon and limber. The gun and limber loaded weigh about 34 cwt. The charge is 15¼ oz. of nitro-glycerine powder, which gives a muzzle velocity of 1,592 f.s. The details of the common

† Some British Artillery officers think that to get really rapid-firing guns the calibre must be reduced for good effect, that is, to increase the number of shrapnel bullets that can be delivered per minute on the objective.—E.G.

shell carried are not known. There are 10 ammunition wagons of which one is filled with common. This re-armament of the Horse Artillery Batteries had not yet been completed though it was to have been by the end of 1902. Experiments with Mountain Guns are in progress.

Russia.—The re-armament of the Field Artillery with Q.F. Field Guns is still in progress. Pending the completion of this, the bulk of the Field Guns are the Horse Artillery and Light Field Artillery Guns of 1895, 8.7-cm. (3.43-inch) which carry 15 lbs. shrapnel and common. The Heavy Field Artillery gun, 10.7-cm. (4.2-inch), has either been replaced by the Light Field Artillery gun or in some few instances by the new Q.F. Field Gun.

This new gun is the 3-inch Q.F. Field Gun of General Englehardt's barrel-recoiling pattern. Its great feature is a muzzle velocity of 2,000 f.s. The shell weighs $13\frac{1}{2}$ lbs., the gun and limber about $33\frac{1}{2}$ cwt., number of shrapnel balls 300. 36 shell in limber besides those on gun carriage. A battery of these guns was on trial during the operations in Manchuria, 1900-1. The Machine Gun in use is a Maxim.

Switzerland.—Further trials have taken place with the new barrel-recoiling Krupp Q.F. Field Gun of 1902, of which some details taken from the *Revue Militaire Suisse* of November, '92 are given. The muzzle velocity attained is about 1,591 f.s. The total weight of gun and limber is about $35\frac{1}{2}$ cwt. Its greatest range with 15° elevation is about 6,132 yards. The advantages of the barrel-recoiling guns were clearly shown in the trials.

Turkey.—The delivery of the Krupp barrel-recoiling Q.F. Field Guns has commenced and about 96 are now in use.

SMALL ARMS, 1902.

General.—The Report says that most European Armies, excepting the British, are taking into consideration the necessity of supplying the troops with automatic† rifles, and some are experimenting with these. Captain Preuss, Instructor in the Cadet School for Militia officers in Vienna, has published a pamphlet giving a very concise summary of the characteristics of the chief rifles in use at present. His opinion is briefly this:—

German Mauser of 1898, "one of the most perfect." Russian, 3 lined, "breech action too complex, jams occasionally." France, Lebel, "a single loader, with a reserve for rapid firing." Italy, "very simple, and one of the most perfect." Great Britain, "a single loader, with a reserve of 10 rounds for emergencies."

The pamphlet has an appendix, giving the trajectory tables of the above-named rifles, and remarks that the Daudeteau†† French rifle, with which experiments are still being made, gives the flattest trajectory at 600 paces from the objective. The Report quotes the eulogistic opinion of General Ben Viljoen of the service qualities of the Mauser rifles and revolvers used in the Boer War.

† By the term "automatic" is meant the arrangement by which the firing of each cartridge recharges and cocks the rifle ready for firing.—E.G.

†† See THE JOURNAL, November, 1900, p. 1323.

At the School of Musketry in Austria, experiments were made as to the practicability of using knapsacks packed with the field kit as shields, etc., while skirmishing, and the Committee reported that, especially if they can be backed by a little earth, they would be useful, and at 800 yards scarcely visible.†

PROGRESS WITH SMALL ARMS IN INDIVIDUAL STATES.

Austria-Hungary.—All troops are now armed with the Mannlicher repeater, model 1895, calibre 8-mm. (.315-inch). The Cavalry, with a similar carbine on the same system, and a motion has been accepted by the Hungarian Chamber of Deputies for the provision of similar rifles for the National Militia (Landsturm) also. The mounted troops are to be provided with "self-loader" revolvers in place of those of the old pattern. Those of the Lueger, Borchardt, Mannlicher, and Roth systems are being tried. Until this is settled on, there is no probability of automatic rifles being experimented with.

Bulgaria.—The Bulgarian Forces are armed with the 8-mm. (.315-inch) Mannlicher rifle and carbine, model 1888, and with the Smith-Wesson, 10-mm. (.39-inch), revolver. Smokeless powders of the Rottweil, and also of the Russian, make are being introduced.

France.—The French Army is still armed with the Lebel 8-mm. (.315-inch) rifle and carbine, though doubtless experiments are being carried on in view to an improved armament. Meanwhile, an improved pattern of the Lebel is being issued, with new sights, which enable it to be used up to 6,000 metres. A new bullet, which gives excellent results, is also said to be on trial. A new nitro-glycerine powder has also been tried against cordite, the Russian powder, and the German powder. It has given with the Lee-Metford a muzzle velocity of 2,378 f.s. as against 1,846 f.s. with cordite. A new carbine is being made in the Government factory at Châtellerault to replace the old pattern of 1892 with the Colonial troops. It is lighter, and yet carries more rounds in the magazine. The principal automatic rifles, with which experiments have been made are the rifle and carbine invented by Colonel *Mondragon*, of the Mexican Army, have a calibre of 7-mm. (.303-inch), and fire a cartridge of the Spanish Mauser pattern. The muzzle velocity is 2,226 f.s. The rifle can be used as a single loader also. When used as a repeater, it is said to be capable of firing 60 shots a minute. It weighs 9 lbs., but is about to be shortened, and will then weigh 8½ lbs.

There is, of course, always the danger of any repeater-action rifle jamming at a critical moment. But as regards construction, rapidity, precision, and durability, it is a wonderful weapon.

Germany and Italy have also patterns of automatic rifles, which are in no way inferior to the *Mondragon*, and this type is evidently the weapon of the future.

Great Britain.—The Report says the Lee-Enfield rifle is being improved and shortened, but is not yet ready for trial. But the result of these trials is kept secret, which gives much dissatisfaction

† British soldiers now rarely carry valises into action, and if they did they would probably prefer the risk of being shot to having their kit spoiled by bullets.—E.G.

to all concerned. The writer goes into certain conjectural details, which it is not necessary to follow, and ends by saying that practically an entirely new rifle will be required. It gives the substance of the note reporting on the Harris and Ross rifles on p. 1321 of *THE JOURNAL* for October, 1902.

It mentions an automatic rifle designed by a Major Woodgate, which can be applied to existing rifles. The chamber is said to be constructed to contain 20 cartridges, so that the number of rounds that could be fired per minute is said to be 200.

Japan.—The whole Army is now furnished with the Meidji model 30 rifle of 6.5-mm. (.255-inch) calibre, and the Cavalry with a carbine of this pattern. It fires a bullet of 5½ dr. weight, with a muzzle velocity of 2,315 f.s. The Report gives interesting figures and tables showing the ballistic merits of this rifle, which we have not space to translate.

Russia.—The Active and Reserve Armies are all armed with the three-lined rifle, model 1891, of 7.62-mm. (.312-inch), and the Cavalry with the carbine of like pattern and calibre. It is not certain if the Militia have these. They have been previously described.

Turkey.—The troops of the three European Army Corps (Ist, IInd, and IIIrd) are armed with the 7.65-mm. (.301-inch) Mauser. The IVth Corps in Asia Minor with the 9.5-mm. Mauser magazine rifle of the old pattern. The other Corps have still Martini-Henry and Peabody rifles. In 1902, 200,000 rifles were ordered from Germany, so it looks as if the intended manufacture in the Turkish workshops is not as yet being carried out.

United States.—The land forces still carry the 7.6-mm. (.300-inch) Krag-Jørgensen rifle, pattern '92, and the Navy the Lee rifle of '95, of 6-mm. (.236-inch).

The Union Metallic Cartridge Company is said to have furnished a new pattern bullet for their Army rifle, which overcomes its irregularity of flight at the longer ranges.†

The Government is engaged in the manufacture at Springfield of the new rifle designed by Lieut.-Colonel H. Phipps, the superintendent of the Small Arms Factory at that place.

Official Reports give some interesting details, comparing the following rifles. A few only are transcribed here:—

Rifle.	Calibre.	No. of Grooves.	Twist.	Weight of Bullet.	Muzzle Velocity.	No. of Rounds in Mag.	Weight of Rifle and Bayonet.	Penetrat'n into Fir at 100 metres.
	In.		In.	Drs.	f.s.		lbs.	ft.
New Springfield Mag. R.	.299	4	9.9	7.99*	2,300	5	9.5	4.75
Krag-Jørgensen M. '92	.299	4	9.9	7.99	2,000	5	10.6	3.79
German Rifle M. '98	.311	4	9.4	8.2	2,145	5	11.5	Not given.
Mauser 7 mm.	.276	4	8.6	6.27	2,200	5	10.3	4.23

* 100 rounds filled cartridges weigh 6½ lbs. avoirdupois.

Trials with the Colt (Browning pattern) pistol have recommenced. The War Department is said to have purchased 200 new pattern im-

† It was perhaps owing to this, and to their use of wind gauges, that the American team was victorious in the International Military Rifle match at Bisley in 1903.—E.G.

proved Colt pistols. The stock is lengthened, making the weapon easier to fire with. When the magazine is empty, it automatically opens, showing the necessity for recharging it. (See *Arms and Explosives*, December, 1902.)

FIELD FORTIFICATION.

The German methods of Field Fortification, inculcated by the Regulations of 1893, have by degrees been adopted generally. We find them again in the new Austrian regulations, thus: (1) Generally one fortified line only. Advanced posts only exceptionally occupied: on the defensive when the defence is thereby obviously strengthened; on the offensive when indispensable as a shelter against counterattack. Important tactical points must be held as rallying points for the Reserves, which command surrounding ground that the enemy must pass over after forcing the front line. Also decisive tactical points behind the main fighting line, or the enemy brings forward superior heavy Artillery. (2) The organisation of the defence of the first line, clearing the field of fire, and occupying supporting points. (3) Adaptation of all cover to the ground, and careful concealment of trenches, etc. Simplicity of trace. Infantry trenches, in view above all to good fire effect, at decisive ranges; Artillery emplacements, good view and long range.

The recognition of these principles was brought about by the replacement of field works by groups of trenches. The main thing is to select, for good tactical reasons, the position of these, which every clear-headed commander should be able to do if he has *practised the art*. This practice is necessary, for, with all its greater technical simplicity, the strengthening of the battle-field by field defences adapted to the ground is more difficult than in the days of commanding redoubts, etc. At the Autumn Manœuvres this is, however, left to the Engineers, and the troops themselves are not practised in intrenching, which is to be regretted, as on service the Divisional Engineers would have far too much to do to throw up entrenchments. The Russians in their Manœuvres, on the other hand, constantly practise this. General Kuropatkin, the commander of the Army of the South, in the great Manœuvres of 1902, did not despise the use of trench work in the attack either, and his Infantry made gun-pits, etc., for the Artillery, and some dug trenches for themselves during the preparatory fire at $1\frac{1}{2}$ miles from the enemy, in order thence to support by their fire the further advance of the troops destined for the assault.

BRIDGING OPERATIONS.

All the Corps in the German Army, excepting the Bavarian, now have the new bridging regulations (provisional), which replace those of 1891. The bridging material was, however, designed for the rivers of Northern Germany, and unsuited to the requirements for more rapid currents. Moreover, the addition of heavy artillery to the Field Army necessitated modifications in the strength of the bridges. The new regulations do not take this sufficiently into account, the old 14½-foot roadway being still kept to. The length of material carried with an Army Corps, too, is insufficient, as part is always required to

strengthen the bridges made with it to carry the extra weights now brought to bear, so the length is hereby necessarily shortened. It is a question, therefore, if new bridging material, designed in accordance with modern requirements, would not be better instead of endeavouring to patch up the old.

The Report mentions a light bridging equipment designed for Cavalry by a French officer named Veyry. The whole equipment (details of which are given, but for brevity not here transcribed) weighs 15½ cwt., and suffices for the construction of a bridge 20 metres long over narrow streams, or of a ferry boat, which will carry 25 men and 19 cwt. of *matériel*. This is said to have given satisfaction at the trials carried out during the French Manœuvres of 1902.

Exercises in the Passage of Rivers.

Germany.—Bridging Operations.—Practice in the passage of rivers was carried out in the 2nd and 3rd Engineer Districts in 1902. The former practised near Rastatt on the Rhine, and the latter between Havel and Elbe, both in September. Three Prussian Engineer Battalions, and the 3rd Bavarian Engineer Battalion, 1 Corps, and 4 Divisional Bridging-trains, took part in the technical operations. 4 Infantry Regiments, 12 Battalions, 2 Cavalry Squadrons, and 2 Field Batteries, from the neighbouring stations, assisted in the operations, which, being carried out under war conditions were very instructive and interesting. An Eastern (Blue) Force having crossed the Rhine between Mannheim and Lauterburg, has to retreat before the Western (Red) superior forces, and its left wing is retiring on the Rappenheim bridge, which it has destroyed, and it has also broken up all the boat bridges near, and taken up a defensive position South-West of Rastatt on the morning of the 30th July.

On this date the Western Force (Red) reached the river at Rottenheim, and succeeded in constructing the first half of a bridge there unperceived by the enemy, who, when the pontoons were about midway across, opened a weak fire on them. About 1.15 p.m., owing to lack of sufficient bridging material, the construction had to be interrupted for 2 hours, but some having been floated downstream it was resumed, and completed by 4.30 p.m. Another bridge was completed by 7 p.m. Red was supported by the Fortress of Strassburg and after crossing a series of manœuvres took place. Blue had been inactive, so Red crossed over to the left bank, pushing his out-posts boldly forward. But owing to well-placed obstacles, Red's attack on Blue's entrenchments failed, and the force had to retreat, followed by Blue. It succeeded in retarding with its rearguard Blue's pursuit until the bulk of the force had retreated across the river again to the right bank, and had cut the bridge, losing only half a company in so doing, but half of Red's bridging material was lost. Red then received reinforcements from Strassburg. Blue marched to Kesseldorf to throw a bridge. They were discovered by hostile dismounted Cavalry on the further bank, who opened fire, and no progress could be made until the Blue Infantry supports, which should have accompanied the Bridge Train, arrived, and cleared the opposite bank. The river is here 275 yards wide, and the bridging material was insufficient, until more was brought up by traction engines, and

the bridge was completed on the 5th August. The following two days the construction of a bridge head and an attack on it were practised.

On the Havel the operations were successful and instructive.

Permanent Fortification.—The Report contains a full and most interesting review of the progress made in 1902 in this, including the project for the extension of the Antwerp works by the late General Brialmont, and gives a tabular statement, showing the progress of and additions to the fortresses in France, Great Britain, etc., together with a very full account of the changes brought about in fortress warfare by modern weapons, the use of iron shields, etc., but the space at our disposal will not admit of our even epitomising this.

SIGNALLING & FIELD TELEGRAPHIC COMMUNICATION.

The "spark" telegraph, as the Germans call it, has progressed during the year beyond the experimental stage for the purposes of rapid communication in the field. It is necessary therefore to examine its position in the German and other Armies. Flash or wireless telegraphy means conveying signals by etheric waves without wires connecting the stations, the electric energy being produced by a dynamo machine or an accumulator battery.

The electric wave produced takes effect through the stratum of air for a certain distance in length and breadth of this stratum and acts upon a highly sensitive electrical apparatus called the receiver at the receiving station, setting in motion there an ordinary Morse "recorder" attached.

Besides this the electric wave can be made to take effect upon a specially constructed telephone at the receiving station by which sounds are reproduced. This apparatus acts at greater distances than the signalling one, as the Telephone is more sensitive to the electric wave than the Signal "Recorder."

The German Army uses the Braun-Siemens system with success. Their Navy is trying the Slaby-Arcq system, the Russian the Popoff, the English and the Italian the Marconi, the French Navy the Ducretet or Rochefort systems. All these differ only in their transmitting and receiving apparatus, etc. The Austrians and United States are still experimenting with various systems. Austria and Russia are however trying Braun-Siemens motor wagons for this purpose. The German Army is the only one that has as yet applied the system to Field Telegraphy. The value of this must increase when it is made simpler and more far-reaching. At present in flat country it is only workable for a radius of 50 kilometres (about 30 miles) with certainty. Flat country without any great elevations of land and damp atmosphere are the most favourable conditions. Setting up stations in the valleys in hilly close country should be avoided, as hills intercept the communication. Etheric telegraphy has the following advantages over the ordinary means of communication, visual signalling, etc.:—

1. It is independent of weather, fog, cloud, and sunshine (except in violent thunderstorms).
2. In a much shorter time than it takes to lay a Field Electric Telegraph communication between stations up to 30 miles off can be established.

The disadvantages are:—

1. Liability to interruption by electric storms, or by hostile confusing signals, or even sometimes by involuntary confusing interruptions from their friends.
2. Liability to have the messages sent read by others than the intended receiver. Even lightning conductors on high buildings can be used for tapping sound messages.
3. The station which is sending a message cannot be communicated with to answer a query.

Professor Braun is however making great progress with his improvements, so that ere long a reliable system of uninterrupted messages may be established.

Wireless telegraphy will not as some erroneously suppose obviate the necessity of the Field Telegraph with the communicating wire, which is still required for long continuous messages and for cross communications, or where several stations are in continuous intercourse, as Wireless Telegraphy can as yet only transmit about 25 words a minute against 75 by the Field Telegraph. But for brief orders, reports, etc., during the actual fighting it is suitable owing to its great portability, and bids fair to fulfil the requirements of battle communication so important and long desired. In Fortress Warfare it will be of great use in connecting the enceinte with far advanced detached works where the field telegraph and telephone communication is interrupted. It can also be the means of communication between the besieged and a relieving force.

In the field rapid communication may be established between two points when (a) circumstances, want of time or physical obstacles may prevent a wire being laid down, or (b) when only short non-continuous messages being required the latter is deemed unnecessary, or again (c) as a temporary measure until a Field Telegraph is laid down (d) when the receiving station is being constantly shifted and its whereabouts even unknown for a time as with Advanced Cavalry Divisions, (e) for communication between land and sea forces, or between the Navy and a landing force on an expedition, etc.

There are fixed and movable stations. Fixed stations, where the transmitters and receivers are usually fixed to high masts, towers, etc., and not intended to be moved, as in fortresses, ships, etc. The movable stations are horsed, motor, or other carriages to which the necessary apparatus is attached. They usually have balloons or kites carrying a transmitting wire which hangs down from them. The German wireless telegraph wagon and limber is drawn by 6 horses, and weighs about 2,000 kilos. (19.6 cwt.). The receiving apparatus and its balloon or kite are carried on the fore carriage, the transmitter and the electrical supply apparatus, dynamo, etc., are carried on the hinder carriage. As a rule one gas-filling for the balloons lasts 12 hours for ordinary communications. The balloons can be carried filled.

The wireless telegraph detachment consists of 2 officers, 1 mounted staff non-commissioned officer, 3 drivers. To work the apparatus 1 non-commissioned officer and 5 men in addition. Each of the 3 drivers is responsible under the non-commissioned officer for the harness, food, and stable management of 1 pair of horses.

On the march one of the 2 officers rides with the staff of the unit to which the telegraph is attached, the other leads the wagon, the 5 telegraphists riding on it. The wagon follows the staff everywhere.

The apparatus can be got ready for signalling in about 10 minutes from the time of arrival at a station, and packed ready for a move in about the same time. It is a great advantage that the transmitting and receiving stations need not be in actual sight of one another as in visual signalling, so the wagons can be placed close to the staff head quarters even when in small farms, streets, etc. This avoids the loss of time in conveying messages from the wagons to the staff. The horses and men can also be billeted or bivouacked close by. In open country it is not necessary to draw in the balloon when moving from one station to another, and it is always of advantage not to have to empty the balloon. The wireless telegraph worked with success in the Imperial Manœuvres of 1902, and subsequent trials have shown that sound signals can safely be transmitted up to a distance of 62 miles and ordinary signals up to beyond 30 miles or two days' march.

For expeditions beyond seas, as for instance in China, the system would have been invaluable, especially if the apparatus could be made lighter so as to be carried on two-wheeled carts.

MILITARY LITERATURE.

The Report has, as usual, a comprehensive list of Military Works published in 1902, as well as many notices of articles in periodicals. From this, space considerations prevent our selecting more than a few, which we think are of the most general use and interest to our readers, arranging them as follows:—

General.—*A Napoleonic Bibliography.* F. KIRCHEISEN. (Berlin, 1902.)

M. 5.) A selection of 1,300 out of 30,000 published works dealing with the Career, etc., of Napoleon I.

Colonial Troops of the Great Powers of Europe. Lieut.-Colonel v. BREMEN. (Bielefeld. M. 30.) Gives the rise of the Colonies, with the organisation, etc., of their Defence Forces.

Les Champs de Bataille Historiques de la Belgique. LOUIS NAVEZ. (Brussels. Fr. 6.) Part I. describes the Battles fought from Courtrai to Jemappes.

Die Armee. A new weekly periodical of Military Art and Science for officers of all arms. Editor, Lieut.-General v. D. BOLK. (Mülheim a. d. Ruhr. M. 2'25 Quartier.)

Military History.—*Bonaparte en Italie, 1796.* By F. BOUVIER. Vol. I. (Paris. Fr. 10.)

Bonaparte's erster Feldzug. Major KÜHL. (Berlin. M. 9.)

A History of the Peninsular War. Professor C. OMAN. Vol. I. (Oxford. M. 14.) Down to the re-embarkation of Sir John Moore's Army at Corunna. The Professor is to be thanked for undertaking this task. The execution of this instalment promises well for the remainder. With this should be read:—

Campagne de l'Empereur Napoleon I. en Espagne, 1808-9. Commandant BALAGNY. Vol. I. (Paris. Fr. 12.)

History of the War of 1866 in Germany. Major-General v. LETTOW VORBECK. Vol. III. The Campaign on the Main. (Berlin. M. 12'50.)

Military History—contd.

La Guerre de 1870-71. Part 8. Forbach. By the French General Staff.

Histoire de la Guerre de 1870-71. P. LEHAUTCOURT. Vol. II. (Paris. Fr. 6.) Brings the account down to the 2nd August only.

Kriegsgeschichtliche Beispiele. Major KUNZ. (Berlin. M. 4'50.) Gives in detail examples of Wood-fighting in the Niederwald on 6th August, 1870.

The Employment of Cavalry in Reconnaissance and Scouting. By Colonel CARDINAL v. WIDDERN. Part 2. The Divisional Cavalry of the 1st Army and the 6th Cavalry Division to the 13th August.

The History of the Russo-Turkish War of 1877. General KRAMER. Part I. (Berlin. M. 11.) From the official Russian account, brings this down to the end of the first Battle of Plevna.

Twenty-three Years in Storm and Sunshine in South Africa. Colonel SCHIEL. (Leipzig. M. 10.)

Tactical Examples from Modern War. Vol. III., 1880 to 1900. By Major KUNZ. Deals with the Campaign of the French in Tonkin, 1883-5, and is instructive in the methods of carrying on Colonial wars. Several new accounts of the Events in China in 1900-1, both French and German are brought to notice.

Infantry and Combined Tactics—*Kriegskunst in Aufgaben.* Vol.

I. Reconnaissance. General G. v. ALTEN. (Berlin, 1902.) With 2 Lithographed Maps.

Taktik. Part III. *Die Gefechtslehre.* Major BALCK. (Berlin. R. Eisenschmidt. M. 10.)

Taktik in Truppenführung in Beispielen. Captain HOPPENSTEDT. (Berlin. Mittler.)

Offizier-Felddienstübungen. Captain HOPPENSTEDT. (Berlin. Mittler.)

La Tactique des Trois Armes. Général KESSLER. (Paris. Châpelot. Fr. 3.)

Quelques Enseignements de la Guerre Sud-Africaine. Général Négrier.

Conséquences Tactiques de Progrès de l'Armement. Général LANGLOIS.

Beispiel eines gewaltsamen Flussüberganges. (Vienna. Seidel.)

- Cavalry.**—*General Karl von Schmidt.* VON PELET NARBONNE. (Berlin, Mittler. M. 175.)
Verwendung und Führung der Cavalerie, 1870. CARDINAL V. WIDDERN. Parts I., II. (Berlin. Eisenschmidt. M. 7 and 8.)
With General French and the Cavalry in South Africa. C. GOLDMANN. (London. Macmillan.)
- Artillery.**—*Die Französische Feld-Artillerie kritisch beleuchtet.* Lieut.-General RÖHNE. (Berlin, Mittler.) 1902.
Bestimmungen für gemischten Waffen Übungen mit der schweren Artillerie. Official. (Berlin.)
- Engineers.**—*Feldtaschenbuch für Offiziere der Pioniertruppe.* (Vienna, Seidel.)
An Important Work (title not given). Lieut.-Colonel SMEKAL. (Vienna.) Literar-Blatt No. 4, 15, 21.
- Artillery Material.**—*Leitfaden zur Unterricht in der Waffenlehre.* Official. (Berlin. 10. Auflage, 1903.)
Einfluss der Schilde auf die Entwicklung des Artilleriematerials. V. REICHENAU. (Berlin, 1902.)

PART III.

CONTEMPORARY MILITARY HISTORY.

In the historical section for 1902, the minor combats of the German Colonial Forces are briefly narrated. Those were (1) in Eastern Africa, (2) South-West Africa, (3) Togoland (Guinea), (4) The Cameroons, (5) The Admiralty Islands, (6) New Guinea.

The Narrative of the War with the South African Republics is continued from the account given in the Reports for 1899 and 1900,† and includes a comprehensive narrative of events from the end of 1900 to the conclusion of the war. It is, as before, coloured by prejudice in favour of the Boer cause, owing to which their successes are magnified and any British advantages obtained attributed to good fortune or numbers, etc., not skill. The British are said to have termed the Boer leaders Guerillas, a term Generals Smuts, de Wet, etc., repudiated, to justify the *violent and cruel* measures they took to overcome the Boer resistance. The attempts to force the Boers into Swaziland, it was said, were made in order that the commandos might be attacked and murdered by the bloodthirsty Kafirs. (About 50 Boer women and children, it says, were murdered by them.) It is an undoubted fact, the report says, that the British made use of armed Kafirs against the Boers and that Lord Kitchener confessed this, but said it was necessary.

It quotes a remark by General Ben Viljoen in his book *My Reminiscences of the Boer War*, that General Plumer's camp near Bethel would have been easily taken by him on the 20th May, had not the British commander caused his troops to withdraw between the wagons

† See THE JOURNAL for November, 1900, p. 1325, and October, 1901, p. 1220.—E.G.

containing the Boer women and children, a ruse often resorted to by the British. It reaffirms the statement that as General Baden-Powell armed the Kafirs at Mafeking and used them as scouts, so in Natal they were allowed to make inroads on the Boers for plunder independently on their own account. A detailed account of the Blockhouse system designed is given, but it is stated that it was a failure, as it necessitated the withdrawal of a number of men for their occupation, who might have been better employed in the drives which were so effective. This was de Wet's opinion also.

The Report gives a succinct account of the many minor affairs of the later periods of the war, dwelling, as it has a right to do, on the many reverses suffered by the British, especially those of Gough's column at Jagersdrift on the 17th September, 1901, and of the gallant Colonel Benson's at Bakenlaagte on the 30th October, of Colonel Spens and of Colonel Firman with the loss of his camp at Tweefontein on Christmas Day, 1901, and of Lord Methuen's disaster on the 7th March, 1902. It praises the skill and courage of Delarey's victory the "most famous of the war," notable for the fact, it says, that 1,100 Boers were here victorious over 1,200 British. It might as well have explained to its readers that Lord Methuen was really in charge of a heavy convoy on the march, for the defence of a convoy is a more difficult matter than its attack even with inferior numbers. The Report also speaks of the British as ignoring the chivalry with which Delarey treated the wounded Lord Methuen on this occasion. This is not quite fair, for, not only did Lord Methuen himself gratefully acknowledge it, but the English Press unanimously wrote in praise of the Boer general's conduct, and doubtless the British authorities in South Africa conveyed their appreciation of it to that officer. In narrating Colonel Kekewich's repulse of the Boer attack at Rouival on the 12th April, 1901, it simply says both sides suffered great loss, omitting to state that 2 guns and 1 pom-pom were retaken from the Boers. In describing in detail the peace negotiations the Report follows chiefly de Wet's account of the transactions, which terminated with the Peace signed on the 31st May, 1902, at Pretoria, whereby the Boers surrendered to Great Britain and so lost their independence. It is not our place, says the writer, to discuss the terms of peace or the question whether the Boers could have continued the struggle.

In our brief *résumé* of the chief points we have been forced by considerations of space to omit the account given of Lord Kitchener's drives, the escape of de Wet through the line of blockhouses, the small results of the British commanders' activity, etc. They have been apparently taken from de Wet's account with which our readers are doubtless well acquainted.

MILITARY OBITUARY.

Albert, King of Saxony.—The most distinguished of the Military Commanders who died during the year 1902, the last surviving holder of the Grand Cross of the Iron Cross, was born in Dresden in 1828, and died near Breslau in 1902 in his 74th year. He joined the Saxon Army at 15 in 1843 and saw active service for the first time in Denmark as a captain in 1849, where he was present at the storming of the Düppel heights by the Saxons and Bavarians. He was given the command of a Battalion in '50 when 22 years old. He married at 25 in

1853 the Princess Louise Vasa. At 29 he was nominated General of Infantry in 1857 and two years later was appointed to the command of the 9th Federal Army Corps. In 1866 he was given the command of the Saxon Army, which, as is well known, followed the fortunes of Austria in the seven weeks war and fought at Gitschin and Königgrätz, where his fine calm but energetic action covered the retreat of the Austrians across the Elbe, and prevented their retreat being turned into a rout. On the submission of Austria and the consolidation of the German Empire it was a question whether the Saxon Army should remain intact. The old Soldier King William I. wisely decided in favour of availing himself of the great military talents of the Crown Prince of Saxony, and he was given the command of the Saxon Army Corps, the XIIth. His brilliant services in this capacity at St. Privat, on the 18th August, 1870, are well known. He was then 42 and was appointed next day commander of the Army of the Meuse. He took a leading part in the crowning victory of Sedan, and in the fighting round Paris. Entering Dresden at the head of the XIIth Army Corps on the return of the Army on the 18th June, 1871, he was received everywhere with loyal and enthusiastic demonstrations. On this day he had been appointed by the Emperor William I. Chief of the 1st Army District comprising the Ist, Vth, and VIth Corps and made a Field-Marshal. When on the death of his father King John, in October, 1873, he succeeded to the throne of Saxony, he gave up his appointments as Army District Commander and Commander of the XIIth Army Corps, to which latter his brother Prince George was appointed, but retained his vigorous and active interest in military matters to the last, doing everything he could for the welfare of his beloved troops whose able and devoted commander he had so long been. He was assailed by an internal malady which carried him off on the 19th June, 1902, thirty-one years after his triumphant return from the great Franco-German War.

General William von Voigts-Rhetz[†] was born in 1813, entered the Army in 1829 at the age of 16. He became Captain in 1837, Major in 1845, Lieut.-Colonel in 1863, Colonel in 1865, Brigadier-General in 1870, and Lieut.-General in 1874. He was on duty in the street fighting in Berlin in 1848 but saw no further fighting until 1866, when he commanded the 2nd West Prussian Grenadier Regiment in the Austro-Prussian War. He was appointed a Brigadier-General in 1870, and his Brigade it was which took Geissberg by storm at Weissenburg. At Wörth he played a distinguished part at the storming of Elsasshausen and Fröschweiler. He was appointed commandant of the Head Quarters at Versailles, retaining however the command of his Brigade. After the war he obtained the First Class of the Order of the Iron Cross. He had the "Pour le mérite" for Nachod and Skalit, and was appointed Lieut.-General Commanding the 20th Division at Hanover. He retired in 1881, and died at Montreux in 1902.

Captain Fritz Hoenig.—This brilliant military writer was born in 1848, and entered the Prussian service in 1863 at the age of 17. He served as Ensign and Second Lieutenant in the Austro-Prussian War of 1866, and gained the military order of the 2nd Class for his conduct at the Battle of Königgrätz. In 1870 he served with the

[†] This officer must not be confused with his elder brother, the Commander of the Xth Army Corps in 1870, who died in 1877. See JOURNAL.—E.G.

38th Infantry Brigade (Von Wedell, Xth Army Corps), as Adjutant of his Battalion at Vionville, where he was wounded, and gained the Iron Cross. He returned to the field in time to take part in the Battle of Le Mans as First Lieutenant. But his health was affected, so he retired in June, 1876, with the honorary rank of Captain. He, from that time, devoted himself to military literature, in which his energetic activity was indomitable. He became Editor of the *Deutsche Heeres-Zeitung*, and contributed to many other well-known papers. His best-known works on the Franco-German War were perhaps "Two Brigades," now called "The Tactics of the Future," in which the conduct of the 28th Brigade at Königgrätz, '66, and that of the 38th at Vionville, '70, is contrasted, much to the detriment of the latter. Then "24 hours of Moltke's Strategy," illustrated by the example of the Battle of Gravelotte; subsequently "The Royal Head Quarters and the Command in Chief on the 17th and 18th August, 1870." In 1885 he published a short biography of Prince Frederick Charles (the Red Prince), and in 1887-91 his well-known work, "Oliver Cromwell." His "*Volkskrieg an der Loire*," and the decisive engagements on the French Saale were widely read. In these, he lays great stress on the "psychological moment," and urges leaders to study the characteristics of their troops. His many military writings and bold outspoken criticisms led to his being deprived of the privilege of wearing uniform in 1900. He died in March, 1902, aged 54.

General F. C. du Barail.—This Cavalry officer spent most of his service from 1839 to 1870. He was trumpeter to the celebrated Colonel Yusuf, of the Spahis. He was promoted Officer in '42, Captain in '48, Commandant of the 1st Cuirassiers in 1857, and of the African Mounted Rifles in 1860. In 1863, he was promoted Brigadier-General, and in May, 1870, Divisional General, and was given the command of the Light Cavalry Division, which fought at Vionville-Mars la Tour on 16th August, 1870, for the first time. He was taken prisoner at Metz. On his release, he commanded the Cavalry investing Paris on the South-West during the Commune, and after that the IIIrd Army Corps. On Marshal MacMahon becoming President of the French Republic in 1873, Du Barail was appointed War Minister, but resigned after a year of office, and was appointed to the command of the IXth Corps at Tours. He retired on reaching the limit of age to the Reserve in 1885, and finally quitted the Service in 1887. In 1894-96 he published "*Mes Souvenirs*,"† Reminiscences in 3 volumes. He died in January, 1902, aged 82.

General L. J. de Colomb another Algerian officer who served under General Chanzy. Appointed to the command of the 17th Division, he afterwards commanded the XVIIth Army Corps, and led it in the Loire Campaign in 1870. He subsequently commanded the XVth Army Corps in Marseilles, and retired in 1888.

The Report also gives a short notice of Captain Georges Gilbert, the author of "*La Guerre Sud-Africaine*," which it praises; but which his premature death prevented his completing.

The deaths of Prince Edward of Saxe-Weimar, and Sir Neville Chamberlain, British Field-Marsals, are mentioned incidentally, but there are no obituary notices of these officers.

† These are of considerable interest as depicting a soldier's life in Algeria.—E.G.

SOME NOTES ON OUTPOST DUTY IN SOUTH AFRICA.

By Lieutenant R. M. G. TULLOCH, 2nd Bn. Royal West Kent Regt.

THESE few notes on Outposts are not put together with the idea of suggesting any new theories, but are simply given as a record of experiences gained from some two years' work in South Africa, which may be useful. At the present time with smokeless powder, and officers and men dressed in a uniform harmonising with the surrounding colouring, the question of the outposts being invisible to an enemy becomes one of the most important points to be considered when posting the sentries and picquets.

In the daytime, the concealment of a picquet is comparatively easy, as it can be placed in a fold of the ground, or behind a house or hedge, but where the difficulty presents itself is in the placing of a sentry where he can see and yet be himself invisible. The most difficult position is one on a grassy, round topped, hill or ridge, and in such a case it is generally well to put the sentry several yards down the hill on the enemy's side, as he can then sit still and observe, the chance of his being seen against his similar coloured background being extremely remote, provided he keeps still. The objection to placing him on the actual hill-top is, that his head shows up clearly against the outline of the hill, especially with a helmet on, and the least movement catches the eye. The helmet showing so much can be greatly minimised by putting grass and bracken on it. On a hill-top covered with scrub and boulders, the question of hiding the sentry is comparatively easy, but even among rocks care must be taken that the soldier's head does not show up over the top of a rock against the skyline. It is even preferable to set him down in front of a stone on the enemy's side, as, on a rocky hill, a man in khaki in the open is most difficult to find even though his approximate position be known. In referring to a skyline of a hill, it must be remembered that this varies as one approaches a hill or recedes from it; so much stress is laid upon this point of not showing on the skyline, because when scouting it is to the skyline of the enemy's position the scout looks for information and usually obtains it.

When a sentry is placed down a hill on the enemy's side, the question of where to place his group and of his being visited by patrols arises. The group can be placed just behind the top of the ridge some distance from the post, and if the visiting patrols and reliefs crawl quickly over the skyline and down to the sentry, they only show for a few seconds, and as their visits only occur at long intervals, they are very unlikely to show where the sentry is. A danger to be carefully guarded against is that of the visiting patrol walking along the top of a ridge in full view, and stopping or disappearing when it comes to a sentry. When

scouts are watching a hill which is supposed to be held, if the visiting patrols show up when going round, the sentries can soon be found, however well they are concealed, and often a single man showing himself may point out exactly where the picquets or groups are.

When scouting for the purpose of reconnoitring an enemy's outpost line, a very good method is, for one or two scouts to work away to a flank and keeping well hidden, fire off a few rounds, when the enemy's sentries will at once move about, and try to find out where the shots came from, and, probably, some of the groups, and even the picquets will come on to the skyline to have a look, thus giving the scouts all the information they require.

It may be rather outside the scope of these notes to refer to the defences made by the picquet when on outpost; but at the same time, one or two examples may not be out of place. When holding a stony hill, covered with big scattered rocks, the best method is to build small sangaars for two or three men in among the larger rocks, care being taken to build these sangaars well down the hill-side. This has the objection of rather splitting up the picquet, but on the other hand, by making small sangaars, and keeping them off the top of the hill, it is impossible to see the defences from even 200 or 300 yards away—whereas a wall, 20 or 30 yards in length, would at once catch the eye. At another time when entrenching on level ground among scattered ant-heaps, it would be found best to make short lengths of trench, with the parapet made into mounds similar to the surrounding ant-heaps or general slope of the ground, as the trenches would then be extremely difficult to see at even short ranges. The object in all cases being to make the defences resemble their surroundings as nearly as possible, so as to give the attackers nothing to aim at.

Before leaving the subject of day outposts, it may be well to draw attention to the fact, that sound carries a remarkable distance on a still day, and that any unnecessary noise in the outpost line, such as the shouting of orders, should be carefully avoided. It is no exaggeration to say, that in South Africa, men could be heard talking quite 500 yards away, and the writer has noticed the same thing in the high country in Ceylon on a still morning. In the still early morning, it is wonderful how far the smell of tobacco goes; on one occasion in South Africa, an ambush, fortunately successful, was laid out for a party of Boers, and one of those captured said they were given their first warning of danger by smelling tobacco smoke when quite 200 yards away. The men in ambush had been allowed to smoke, it being broad daylight at the time, and no one thought the smell would carry so far.

As night outposts are by far the hardest and most trying, reference will now be made to some of the practical experience gained in carrying them out in the late war. The position of the sentry at night on open level ground should, whenever possible, be in any slight hole or hollow, as he is then lower, and can see any person approaching against the skyline, while being himself less visible. As an example of this, when going round sentries in South Africa on a moonless night, when near a sentry but not quite sure of his exact position, the writer of these notes, by lying or crouching down, was often able to see him against the stars, whereas on standing upright the

sentry could not be seen at all. So much was this point remarked upon, that on open ground, when time permitted, a small hole, a foot or two deep, was dug for the sentry to stand in, so as to make him less visible. When the outposts were entrenched on a hill in small sangaars, as was often the case, it was found best to place the sentry a yard or two in front of and down below the sangaar, where his group was sleeping, as he did not then show up to anyone approaching from the bottom of the hill, as the sangaar formed the background for him.

In undulating country, the groups and sentries were, when possible, placed in the dip between two ridges, the sentries could then see any enemy approaching over the ridge in front, as he showed even on very dark nights when crossing the skyline, while the groups and sentries being at the bottom of the hollow were quite invisible.

Another point which took a very long time for sentries to learn was that at night as well as by day they must keep perfectly still, as the moment a sentry moves he shows where he is, and also the noise made by moving about might prevent him hearing anyone approaching.

At night, our sentries had orders to lie down when challenging, as lying down the sentry could see the person approaching while being himself invisible. Several times when visiting sentries, the writer, after answering the challenge, found it necessary to call to the sentry to say where he was, to enable him to advance and give the counter-sign.

While referring to the subject of challenging, the British soldier is far too fond of shouting at the top of his voice, even on the calmest night, so that an enemy within 500 or 600 yards can tell exactly where the sentry is. Under these circumstances, all that an enterprising scout would have to do would be to lie down some 500 yards outside the line of sentries and note the exact position of each sentry as the visiting patrols went round. Besides, the excessive noise of such challenges, there always seems to be a very unnecessary amount of challenging in an outpost line, however well it may be done.

It would be a great saving of unnecessary noise if the visiting patrols and officers of a picquet, when going the round of their sentries, could have some private arrangement of whistles, say for each company or picquet, which would take the place of the challenge, except in the event of the signal not being answered correctly, when the sentry would challenge as well. (This is now prescribed in "Combined Training.") Of course anyone approaching from the front and officers visiting the whole picquet line would be challenged in the ordinary way.

Being an outpost sentry is always rather "jumpy" work, so that, if time and means permit, any slight obstacle that can be placed in front of each group to prevent it being rushed, gives a decided feeling of security. Even a few strands of barbed wire, if available, laid loosely on the ground, or, better still, raised about a foot on stones or wooden pegs, is a most awkward obstacle to come across in the dark. Empty jam pots and tins of any description scattered here and there on the ground about 20 yards in front of the sentry are very effective, as on a dark night it is impossible to walk through them without knocking against one or two and so giving an alarm. The idea, at one time very prevalent in South Africa, of hanging tins on a wire fence or wire entanglement, so that anyone getting through or over

the obstacle would rattle the tins, is not at all good, as on a windy night the tins swing and rattle to such an extent that it is impossible to hear anything. If tins are available, it is far better to adopt the method of scattering them on the ground in front of the obstacle, or else attaching them to a trip wire so that they cannot swing with the wind.

If the sentry line should be fairly permanent, as in the case of holding a town or fort, a very good system is that of running a trip wire along about 20 yards or more in front of the sentry or even along the whole line of sentries. This wire should be stretched taut, and should run through loops on supporting sticks, and be so arranged that, if kicked against, a tin or stone would be made to rattle close by a sentry.

While on the subject of night outposts, it may not be inopportune to refer to the work of reconnoitring patrols which is so important a branch of the subject. It was found that the average reconnoitring patrol of a non-commissioned officer or old soldier and a few men was very nearly useless at night, as they were continually getting lost in consequence of not being able to work by the stars or landmarks when away from roads. Also owing to the noise made by accoutrements rattling, and by the men in ammunition boots stumbling and kicking against stones, etc., an enemy had plenty of warning of their approach and could either lie quiet till they had passed, or capture them if preferred.

What is suggested for reconnoitring purposes would be a couple of men (scouts) thoroughly trained to work across any country at night by the stars, etc., and who had learnt the art of walking quietly, perhaps even being provided with some rough covering for the boots, such as a puttie, to deaden any sound. These men could be trusted to do their work well and quietly, and would be sent out for a stated period, part of which time might be employed in lying perfectly still listening for any sounds or movements on the part of the enemy.

It is confidently believed that any officers on picquet would far prefer to have one such patrol that knew its work to three or four of the ordinary kind which go stumbling about giving everybody warning of their approach. (These scouts are now provided for with a minimum of sixteen per company.)

With reference to the question of how the picquet should sleep so as to be ready for an attack, it was found best to extend the picquet and allow the men to sleep actually where they would have to be in case of attack, and, as each man slept with his rifle beside him, on an alarm being given all that was necessary for him to do to be ready, was to roll over and seize his rifle. This arrangement rendered it unnecessary for men to get up and move about, which so often leads to confusion, and shows the attackers exactly where the picquet is.

Before closing these notes, it may be as well to refer to the fact of the absolute invisibility of khâki at night on dry grass or sandy soil, even when there is a certain amount of moonlight. The writer has on several occasions approached to within four or five yards of men in khâki lying on withered grass without being able to see them. The knowledge of being invisible at night, when lying down against a favourable background, gives a great feeling of confidence, especially when out reconnoitring.

THE FRENCH NAVAL PROGRAMME OF 1900-1906.¹

*By M. de LANESSAN, Member of the Chamber of Deputies,
and late Minister of Marine.*

(Translated and abridged by permission of the Author.)

Continued from September JOURNAL, p. 1043.

CHAPTER II. BATTLE-SHIPS.

IN battle-ships offensive power and protection are the two qualities which predominate, but there are other qualities which it will not do to neglect, although they may be considered of only secondary importance. A ship, for instance, to reach the highest point of her fighting efficiency must have a speed and radius of action equal to, if not superior, to similar vessels in foreign Navies.

If it were possible to give up speed and radius of action in battle-ships, we should be able to give them great offensive power and protection on a moderate displacement, but then it is not possible to reduce the speed and radius of action below a certain limit; nevertheless, battle-ships being constructed principally with a view to operations where they act with others in a fleet, it is offensive power that is the most essential, and for them speed must be secondary to the armament and protection.

Speed however cannot be entirely disregarded, and it is necessary that the coal supply should be properly proportioned for the distances the ships may be called upon to steam, and the time they may have to spend at sea. Since, however, battle-ships as a rule are not intended to act far from their ports, the weights which represent the radius of action can be reduced in favour of those representing armament and protection, so long as the limit is not passed, which would tie them too closely to their base.

The offensive power being the primordial quality of a battle-ship, it is necessary, if she is worthy of the name, that she should be designed to carry the largest possible number of the heaviest guns, and at the same time the most rapid-firing weapons which are known at the time she is laid down. In the actual state of naval science, this maximum of offensive power seems to be represented by four 12-inch guns, from

¹ "Le Programme Maritime de 1900-1906. Par J. L. de Lanessan, Député, Ancien Ministre de la Marine. 2nd Edition. Paris: 1903.

fifteen to eighteen 6-inch guns, and a certain number of very rapid-firing guns of small calibre, with four or five torpedo discharges, submerged or above water.¹

The protection of the hull ought to be such that at the normal range for action between battle squadrons, that is to say from 1,000 to 2,000 yards, the engines should be sufficiently protected against the heavy and medium guns, whose projectiles alone would on striking have any chance of penetrating the armour. Knowing, for instance, that the armour-piercing projectiles of the 12-inch gun, with which almost all the latest battle-ships in most Navies are armed, can only penetrate a 12-inch plate, under conditions of battle, which it would be difficult to obtain, we ought to take care that the machinery and other vital organs of our battle-ships should be protected by armour plates not less than 12 inches in thickness.

If this armour is thicker, with the same resisting qualities, than that of our enemies' battle-ships, we shall have the great advantage of being able to fight at a longer range and to inflict greater damage than we shall ourselves receive; as, for example, between those of our battle-ships which are protected by 12-inch armour, and those English and German ones protected only by 9-inch armour or less, which at 1,500 yards can be easily penetrated by the projectiles from our latest pattern 12-inch guns, while similar projectiles would probably fail to get through our armour at the same range. Similarly with regard to the guns carried by the German ships, while at 1,500 yards our projectiles would be penetrating the armour of their ships, the projectiles from their guns would do but little damage to that of ours, and before they would have any chance of penetrating, it would be necessary for them to approach to within 500 yards, which would only put them at a still greater disadvantage.

An excellent plan has been adopted in the French Navy for the protection of the heavy and medium guns, which are mounted either singly or in pairs in movable ellipsoidal turrets, protected by Harveyized steel armour of a thickness at least equal to the calibre of the guns to be protected. For example, the armour of the turrets of the 30·5-cm.

¹ With the object of reducing the amount of total displacement devoted to armament, whilst increasing the offensive power of the ship, the experiment has been made in some Navies, notably in the German, of substituting 9·4-inch guns for 12-inch. The economy in weight thus effected is devoted to an increase in the supply of ammunition, or in the number of guns of medium or small calibre carried. It would seem that the idea underlying the adoption of the lighter gun was that the 9·4-inch guns could fire far more rapidly than the 12-inch, and that their projectiles were sufficiently powerful at short ranges to penetrate the thickest armour carried by ships. In view, however, of the great improvements recently made in the 12-inch guns, especially as regards their increased rapidity of fire, and the penetrative power of their projectiles even at long ranges, other nations have hesitated to follow the German example, and it is these considerations which have no doubt determined England to remain faithful to the 12-inch guns for her battle-ships, and the United States in adopting them for their latest ships.—AUTHOR

Germany is putting 11-inch guns into her latest battle-ships, in place of the 9·4-inch, so presumably she is coming round to the views held on this question by the bulk of the other great naval Powers.—TRANSLATOR.

guns is 30 cm. thick, while the turrets for the 15 to 16·4-cm. guns are protected by armour correspondingly thick.

The turret system has now been adopted for a long time by most Navies; and as far back as 1889 the Superior Council of our Navy recommended the adoption of the system for the guns of medium calibre, and the recommendation has been since adopted in a certain number of our ships. There is scarcely need to point out the advantages which it offers over the old plan of mounting the secondary armament in large batteries, where one lucky projectile might put several guns out of action, whereas one or two guns mounted in armoured turrets by themselves will be almost invulnerable, and even if one turret is silenced, the working of the others is in no way affected. The turrets in which the secondary armament of our ships are mounted have distinct advantages from the point of view of protection over the system adopted in most of the English ships.

Any battle-ship laid down now, if designed for a less speed than 18 knots, must be considered inferior to the bulk of those being constructed for foreign Powers.¹ A radius of action is quite sufficient for our ships, if it reaches 4,000 miles at 10 knots, as it allows of a battle-ship moving freely in European waters; of passing, for example, from the Mediterranean to the Channel without it being necessary to re-coal.

It is necessary to note that in order to attain the primordial qualities in ships of war in the proportions already referred to, it is

¹ If we wish to have a battle-ship heavily armed and well protected, it is almost impossible, in the actual state of naval science, to give her a higher speed than 18 knots, without a considerable addition to her displacement. If, for example, we wish to give our new 14,865-ton battle-ships a speed of 19 knots, with the same offensive power, and the same protection for which they have been designed, it would be necessary to increase their displacement to 15,750 tons; to enable them to attain a speed of 20 knots, the displacement must be increased to 16,750 tons, and to 18,000 tons for 21 knots. These are considerations which have led certain experts to the conclusion that it would be advantageous to us to sacrifice a certain proportion of speed in our battle-ships, as without any reduction then of their offensive power or protection, their displacement at least could be reduced, and the machinery made stronger to stand wear and tear. This is the view held by that eminent constructor and designer M. Normand, who considers that while it is not possible to reduce either the armament or armour protection, yet that the speed might be decreased from 18 to 14 knots, which would allow for the same expenditure of an increase in the number of units in the proportion of three to two. Under the present system of protection of armoured ships, he thinks it is impossible for them also to fulfil the conditions which the high speeds of the present day demand. He is of opinion that numbers, not speed, will tell in an action; but he forgets that the faster squadron can always avoid an action if over-matched, and could often carry through successful operations before the slower one could come on the scene of action. From which it results that it would be imprudent on our part to build battle-ships of only 14 knots speed, while those of possible enemies have a speed of from 16 to 18.

Speaking generally, if any class of war-ship is to carry out successfully all the duties which may be demanded of it, it is necessary that the respective units should be in no way inferior to those to which it may be opposed.—AUTHOR.

indispensable for battle-ships to have a displacement approaching 15,000 tons.

The 14,835-ton Battle-ships of the 1900 Programme.—It is to fulfil these conditions that the plans of the 14,835-ton battle-ships were drawn up, which figure in the programme submitted to the Chambers by M. de Lanessan in conformity with the view of the Superior Council of the Navy.

The offensive power of the ships is represented by:—Four guns of 30·5-cm. (12-inch), mounted in pairs in two turrets, one forward and one aft; eighteen 16·4-cm. (6·4-inch) Q.F. guns, 12 of which are mounted in pairs in turrets, three on each side, and the remaining six guns in casemates; twenty-six 3-pounders, two 1-pounders, and five torpedo discharges.

Protection is afforded:—1. For the hull, by a complete water-line belt 12 inches thick, with an upper strake 10 inches thick to a height of 8 feet above the water-line, while from the stem to the fore-turret the side, as high as the upper deck, is protected by 3-inch armour. The principal armour deck is 2 inches thick on the flat and 3 inches on the sloping sides; the upper armour deck is entirely horizontal and 2 inches thick. 2. For the guns, by turrets protected by armour 12 inches thick for the 12-inch guns, and 6 inches for the 6·4-inch guns; the casemates for the remaining 6-inch guns are protected by 6-inch armour, carried up from the armour belt. The conning-tower is 12 inches thick.

The speed is to be 18 knots without forced draught, and the radius of action 4,000 miles at 10 knots speed, on the normal coal supply.¹

¹ It may be interesting to quote here some remarks by the United States Board of Construction, in a Report, 26th November, 1901, on the question of the armour protection of battle-ships:—"It is the opinion of the Board that both battle-ships and armoured cruisers should carry as much armoured protection as is practicable without detriment to their other important features. A given weight can only be allotted for the purpose of protection, which in battle-ships ranges from 22 to 28 per cent. of their trial displacement, and in armoured cruisers from 7 to 20 per cent., exclusive of the protective and so-called armoured decks. The maximum percentage above given affords an allowance of weight for armour sufficient for a complete water-line belt; for upper and lower casemates and armoured transverse bulkheads; for turrets for the heavy guns and for those of smaller calibre; and for conning and signal towers. The most approved method of protection is to cover as much of the vessel as possible. Eleven inches is the maximum thickness of armour of the best quality considered necessary or desirable for battle-ships, such armour being used for the heavy part of the belt and the turrets and barbettes of the heavy guns. Owing to the recent great increase in gun power, it has been necessary to increase the thickness of casemates from six inches, as heretofore used, to seven inches. In the case of armoured cruisers of high speed, it being impracticable to assign as large a percentage of displacement for armour as in the case of the slower battle-ships, the maximum thickness of the armour for the armoured cruisers has been reduced to six inches for the heavy part of the main belt, with 5-inch armour for casemates; turrets and barbettes for heavy guns being eight inches thick, and the turret port plates nine inches thick." The Board also fixed the speed of battle-ships at 18 knots, and that of armoured cruisers at 22 knots; the speeds which had already been determined on for those two classes of our ships.—AUTHOR.

THE DUTIES OF BATTLE-SHIPS.

The fighting duties of battle-ships result naturally from their organisation and the qualities in which they excel. They represent the offensive weapon *par excellence* of Navies.

1. *Fleet Actions*.—In naval battles, the brunt of the fighting falls on the battle-ships, and the better protected these are the more capable will they be of maintaining a long struggle. If we take, for example, two squadrons consisting of ships having the same offensive power, whose gunners are equally well-trained, and which are handled with equal skill, it is very evident that if the ships on one side are better protected than those of the other, that that side must win, owing to the greater resisting power of the ships. From the battle point of view, and bearing in mind how the squadrons of other naval Powers are constituted, it is impossible not to admit that battle-ships are indispensable to us, and that they must be not only heavily armed, but also have all their vital parts perfectly protected. It is maintained in some quarters, it is true, that in an action between two squadrons, the less well protected one, if it possesses a higher speed than the other, should win the day if properly handled, but the result of all the trials which have been made to test the accuracy of this opinion shows it to be ill-founded. It is clearly established that the squadron composed of the best protected ships must in the end get the upper hand, if the fire on both sides is equally good, as owing to their superior protection the ships can be handled solely with the view of bringing the most effective fire to bear against their opponents, who on the other hand, in taking up their positions, will have to consider how best to utilise their powers of resistance as well as of offence.

It is well understood that the slower squadron can only be assured of victory so long as its ships are much better protected than those of the faster enemy. It is precisely for this reason that the Superior Council of the Navy is right in demanding for our battle-ships, to enable them to take the offensive with success, the *maximum* of protection realisable at the time of their being put in hand not alone for the hull, but also for the guns and the machinery below the armoured deck.¹

¹ There are theorists who condemn battle-ships and fleet actions and who lay down, as a principle, that we ought only to have faster ships than those of our rivals, and in order to attain this speed they would sacrifice the greater part of the protection. They propose only to construct vessels of some 16,000 tons or more, with a speed of from 24 to 25 knots, very powerfully armed, but with a minimum of protection, in order that the two first qualities might be obtained. Their thesis is that these ships could always refuse battle with slower enemies, and would have nothing to fear, however strong and well-protected these might be.

They forget, when arguing in this fashion, that even if in principle the faster ships could avoid an action, that even then victory would not remain with the country which only possessed a supremacy in speed. Whilst a French squadron, for example, with an advantage in speed, could draw away from a slower English or German one, the latter would be able to carry out offensive operations eminently damaging to France, as they pleased, such as: a blockade of the naval ports, preventing our cruisers from slipping out, the destruction of our commercial harbours, the dis-

Those who are against battle-ships are opposed also, in general, no less energetically to fleet actions. These battles, in their opinion, serve no purpose; France ought, at all costs, to avoid them, and if we are at war with a Power stronger at sea than ourselves, they think we must shut our battle-ships up in our harbours, and confine ourselves to hunting down the enemy's merchant-ships with our cruisers. It is scarcely necessary to say that they strongly recommend these tactics in case of a war with England, whose fleets and mercantile marine are the most important in the world.

In reality it is far easier to lay down the law as to what should be done under certain conditions than it is to carry it out, because it does not depend upon us whether our rivals have battle-ship squadrons or not. But it is impossible not to be struck with the fact that every country is striving to build as large a number possible of battle-ships, and that even the youngest Naval Powers, Japan and the United States, are following the example of the older ones in constructing battle-ships of a maximum tonnage, in order to obtain in the highest degree the qualities pertaining to this class of ship.¹

In these conditions one could not well see with indifference our battle-ship squadrons remaining immobile and dumb alongside our dockyards, while those of England, Germany, or Italy were bombarding our commercial towns and even some of our naval ports. Where is the Minister, or the Commander-in-Chief of a Fleet, who would be able to resist the clamour arising from our burning towns and from an indignant public opinion? Since we cannot then avoid giving battle to our enemies, let us have squadrons capable of making head against those of our rivals, and, consequently let us do all in our power to make our ships at least equal, if not superior, to theirs. And as we have established that the fighting value of a battle-ship lies not only in her offensive power, in her speed, and radius of action, but also in sufficiency of armour protection, let us then see to it that this sufficiency of protection is given to our battle-ships.

Battle-ships Necessary for Other Duties.—M. de Lanessan next briefly draws attention to other work which battle-ships may be called on to perform. In the event of war with either England, or the Triple Alliance, or with both combined, it may be necessary, he points out, to transport troops from France to Algeria, or *vice versâ*, and

embarkation of troops, etc., etc. The very fast French squadron could, it is true, not be beaten; but it would not prevent France from being so.

On the other hand, it must not be forgotten that very fast ships are also great consumers of coal. However large her bunker capacity, a ship steaming 26 knots would very rapidly empty them. And what would happen, when, after having consumed her coal, she should find it impossible to escape from a slower but much better protected ship, or to force the blockade established by a hostile squadron of the ports where she is compelled to re-fill her bunkers?

To resume, it is necessary that our battle-ships should have a speed at least equal to similar ships of foreign Powers, higher even, if possible, but on no consideration must either their offensive power or protection be sacrificed to obtain speed.—AUTHOR.

¹The United States Ministry of Marine have decided on the construction of battle-ships which are to have a displacement of 15,000 tons. Japan quite recently had a battle-ship of rather over 15,000 tons built in England.—AUTHOR.

he holds strongly the opinion that the duty of conveying troops can only be entrusted to battle-ships powerful enough to keep off hostile vessels. He admits it would be possible to arm transports with 6-inch Q.F. guns, which might do some damage to an enemy, but it would be madness to do so, as the only result would be the sinking of the ships with all the troops on board. Armoured cruisers might be employed to convoy, but although powerfully armed, yet their insufficient armour protection would prevent their being able to maintain a struggle for any length of time with any battle-ships worthy of the name, and after their defeat the transports would have no option but to surrender or be sunk. Nor does he consider the proposal that destroyers, torpedo-boats, or submarines should be used for convoy purposes a feasible one, no matter how many of them might be employed. To battle-ships, and battle-ships only, in the author's opinion, can the duty be safely entrusted of conveying troops across the Mediterranean, for instance, and that they may be called upon for this duty emphasises again the necessity there is for France to have a fleet of battle-ships, as well armed and as well protected as those of possible enemies, better armed and better protected, if it is not possible to be numerically as strong.

Coming next to the question of landing an expedition on a hostile coast, M. de Lanessan again points out that only to battle-ships can be entrusted the duty of conveying the expedition and of covering the disembarkation. In the event of war either with the Triple Alliance or England, the question of landing an expeditionary force ought, in his opinion, to be one of the first considerations in the minds of the French Navy. In the first case, as soon as war is declared, France ought to land an expeditionary force in Italy, Sardinia, or Sicily; in the second case, some point on the English, Scotch, or Irish coasts should be carefully selected in advance. The French Army is so strong, as compared with that of either Italy or England, that its use for such operations should be kept steadily in view from the very commencement of war with either Power. But no landing will be possible unless our battle squadrons are sufficiently strong, if not to destroy the enemy, at least to be able to obtain the mastery of the sea sufficiently long to allow of the disembarkation being effected.

For an attack on coast batteries or the defences of a harbour, the author contends that battle-ships are the only vessels which can be employed with any chance of success. He is not prepared to enter into any discussion as to which has the best chance of winning, whether the battle-ships or the batteries, since, theoretically, arguments can be produced which will favour either view; but putting theoretical discussions on one side, it is indisputable, in his opinion, that battle-ships, better than any other class of ship, can do more damage to fortifications and stand less chance of being damaged in return.

CORSAIR WARFARE.

Battle-ships are not designed with a view to carrying out operations far from their base, as they have neither the high speed nor the radius of action necessary for them. Nevertheless, the more determined advocates of *corsair warfare* are of opinion that the cruisers destined for this duty will have a better chance of being successful, if they are supported by battle-ships.

History shows us that, if in the past *corsair warfare* has only produced results which have had but little effect in determining the final issues of naval war, even at a time when a great deal of damage was inflicted on the enemy's commerce, the reason was that we did not have at that time line-of-battle ship squadrons which were able to hold in check the enemies' ships. Free in their movements, these last were able to run down our *corsairs* and destroy them one after the other. And it is safe to say that the same result would ensue at the present time in the event of a war with either the Triple Alliance or with Great Britain.

In the opinion of most of our officers, if we have not battleship squadrons, or if our squadrons are not strong enough to dispute with the enemy the mastery of the seas which wash our coasts, we shall in all likelihood be obliged to give up all idea of carrying on a *corsair warfare*; since, although it might be possible for some of our *corsairs* to slip away from our harbours unknown, yet most probably they would be unable to get back again, and, above all, they certainly would be unable to bring in merchant-ships they had captured.

Corsair warfare far away in the wide ocean is, in effect, only possible if our principal ports are more or less kept open by battleship squadrons strong enough to keep the enemy in check in the seas which surround us. This condition is imposed on France all the more imperiously that our *points d'appui* in distant seas are extremely few. In the case of a war with Great Britain these would be almost completely closed to our *corsairs* by means of the powerful naval stations that that Power maintains in all parts of the world. It is probable that from the first day of the declaration of war, our few Colonial naval ports will be blockaded by the ships using these stations as a base, in order to prevent our *corsairs* from re-coaling and renewing their supplies. These preceding conditions apply not only to *corsairs* properly so-called, whose sole object will be to run down hostile merchant-ships and capture or destroy them, but also to those of our protected or armoured cruisers, which may have been detached to foreign stations, either with the view of seeking out and destroying the enemy's weaker cruisers, or with the simple object, approved by many of our officers, of drawing after them some of the enemy's ships, and consequently diminishing his strength in European waters.

If these operations are to have any chance of success, it is indispensable that our vessels should be able to enter or leave our harbours at will. But if they are to be able to do this, it is necessary that the enemy should not have entire command of the seas adjacent to our shores, and this he would not have if we have squadrons sufficiently strong to dispute the mastery with him. Several of our seamen, who are partisans of a *corsair warfare*, hold that the most favourable points for us for such a war will be the European waters, particularly the Channel and North Sea on the one hand, and the western portion of the Mediterranean on the other, since all the English, German, or Italian merchantmen have to pass through these seas, whether employed in local trade, or outward or homeward-bound from trans-oceanic ports, and that it is here that our cruisers should for choice run them down. They do not ignore the fact that here the enemy will be in a favourable position to afford protection to his merchant-ships, but they think that on the other hand it will be much easier, at least at first, for our cruisers

to commence operations in these waters, and that they will be in a position to inflict considerable damage, on account of the large number of cargo-boats which navigate them, and moreover by the rapidity and suddenness with which the chase operations can be carried out. But they insist that there shall be battle-ships on which the cruisers can fall back for support. "We can scarcely count," said one of our admirals at the time of Fashoda, who advocates strongly a *corsair warfare*, "upon our light ships doing much in the heavy seas of the North, if they are not supported at sea by an *échelon* of our battle-ships, chosen from those which steam best, on which they can fall back in case of necessity." Another of our admirals advocates the organisation of small squadrons consisting of a battle-ship and four or five cruisers, using her as a base and falling back under her protection in case of danger.

It may appear doubtful if such formations could be of much service against a powerful maritime enemy, but the fact that they are conceived and advocated by the most resolute adherent of a *corsair warfare* bears testimony to the great importance which is attributed to battle-ships, even among those whom the public have been taught to believe most hostile to them.

PROTECTION OF THE TERRITORY AND COMMERCE OF THE NATION.

To the other duties of which we have spoken must be added one more for battle-ships, which is of no less importance; it is that of protecting our coasts from hostile attacks. It is true that torpedo-boats and submarines will probably be able to play an important part in this duty, but with the comparatively small range of the torpedo they will be unable to prevent a hostile squadron from bombarding our commercial towns or coast batteries. During the day it will be impossible for torpedo-boats to act, while during the night the submarines will similarly be reduced to impotence, so that both by day and night an enemy's squadron, duly protected by its destroyers and its torpedo-boats, which the English Navy at least has not given up, can at long range, with every chance of success, bombard a large number of points on our coasts, without running any serious risks from our torpedo-boats or submarines, particularly if there is any sea on.

For the rest, a Navy could not resist for any length of time an enemy possessing powerful squadrons of battle-ships, if its defensive power consists solely of torpedo-boats and submarines, without battle-ships, as ours would do, if the advice of certain theorists were followed. It must be remembered that torpedo-boats, even sea-going ones, can do nothing in bad weather or a heavy sea. It is only necessary to call to mind some of our naval manœuvres, where in a seaway the torpedo-boats were quite unable to keep up with the battle-ships, or discharge their torpedoes, while the larger ships had no difficulty in carrying out the duties assigned to them of bombarding the coast, covering landings, etc. It is clear then that often in war hostile squadrons will be able to act against our coast defences without having anything to fear from our torpedo-boats, which will not be able to leave harbour or work their torpedoes even if they do. It must also be remembered that even in peace service there is a great strain not only on the boats themselves, but on their crews, so that in war-time, even in favourable circumstances, torpedo-boats are not likely to be able to keep the sea for more than three or four days on the stretch. If, therefore, we are to have no other definite means of

defence besides torpedo-boats, it is difficult to see what economy would be effected by substituting them for battle-ships, as we should require such an enormous number of them, leaving out of account the other grave objections to which a *Defensive* dependent entirely upon these boats would be open. These considerations apply equally, if not more so, to submarines, while the fact remains that no Navy is giving up battle-ships, on the contrary they are still considered the *offensive weapon par excellence*, and as the most powerful and most certain weapon of defence.

It is true that the opinion is held in certain quarters that the bombardment of coast towns would not in any way affect the course of the war, as the amount of damage inflicted would be very small; but it is forgotten what a state of panic would be produced in the country by the menace alone of such bombardments, and in this connection it is well to recall what all historians of the recent Spanish-American war have to say as to the state of panic which was manifested everywhere along the East Coast of the United States, when it was believed that an attack by Admiral Cervera was possible!¹

We are convinced that in case of a war with Great Britain or the Triple Alliance, one of the things which would cause the most disturbance in the country would be the bombardment of places like Havre, Dunkirk, Marseilles, Nice, Algiers, Oran, or, in a word, any one of our great mercantile seaport towns. Hence it follows that if such bombardments are to be prevented, we must have sufficiently powerful battle-ship squadrons to enable us to command our home waters.

Moreover, if we abandon the mastership of our own waters, it is not only that our coast towns will be bombarded, and our naval ports blockaded, but all attempts at carrying on a *corsair warfare* will be foiled; while the principal trade routes will be closed to our merchant-ships, and France would be cut off from all those countries, with which she maintains communications by sea, indispensable for her industry, agriculture, and commerce generally. Such a state of isolation would not be quite so harmful to us as it would be for an insular nation like England. Nevertheless, the consequences would be sufficiently grave, especially if it was brought about by a war with the Triple Alliance, which would at the same time close our land frontiers. During the war of 1870, Germany having no Navy, all the seas were open to our war-ships, our Mercantile Marine, and our trade; but this will no longer be the case in a fresh war with that Power, if we neglect to construct battle-ships capable of enabling us to hold our own in European waters with the already extremely powerful squadrons of the Triple Alliance.

Even if we do not contemplate an offensive rôle for our battle-ships, it will nevertheless be repugnant to common-sense if we do not construct a sufficient number to efficiently protect our coasts and our commerce in European waters, and everything that has been said points irresistibly to the logical conclusion that battle-ships are absolutely necessary for our country, purely from a defensive point of view, and it is equally necessary that they should be, as far as possible, superior in fighting and defensive qualities, to those of our maritime rivals.

¹ M de Lanessan here quotes from Captain Mahan's book on "The Lessons of the War with Spain," in support of his view.—TRANSLATOR.

COMPARATIVE VALUE OF FRENCH AND FOREIGN BATTLE-SHIPS.

Before determining what number of battle-ships France ought to possess, we must see what is the value of those we have when compared with vessels of the same class of other Powers, and if care is being taken that the ships proposed to be built are at least a match for, if not superior to, those of our rivals. We will therefore endeavour to pass in review the qualities possessed by the best ships of similar classes in other Navies which are actually in commission or are being built.

1. Taking Great Britain first, it will be seen that of all maritime nations she is the one which attaches the greatest value to battle-ships. She possesses the largest number, and she was the first to adopt for her ships heavy displacements, with the object of obtaining for them the greatest possible offensive power combined with the best protection. In this she is faithful to her naval policy, which is an essentially offensive one. Desirous of vigorously attacking the enemy, wherever he may be, as soon as possible after war has been declared, she endeavours to obtain the ships best fitted for the work, which are battle-ships.

M. de Lanessan then briefly describes the different types of English battle-ships, beginning with the "Royal Sovereigns," and coming down to the "Duncans," and compares them with the six new battle-ships now being laid down in France, in accordance with his programme; ships which he considers in every way superior to any of the English battle-ships he discusses.¹ He condemns the "Royal Sovereign" and "Majestic" classes for their inadequate speed, pointing out that, although designed for 17.5 knots, they cannot count on a sea speed of more than 16, and also comments unfavourably on the lack of protection for the guns of the ships of the first-named class.² Coming to the "Canopus" and "Duncan" classes, he points out that the thickness of the belt, 6 and 7 inches respectively, in these ships is quite inadequate, as it can be easily pierced not only by the French 12-inch, but also by their new 6.4-inch guns, while, even in the ships of the "Formidable" class, with their 9-inch belts, the protection is insufficient, and that the insufficient protection in all these ships is due to a violation of the principles to which he has already drawn attention, which should be observed in the designing of battle-ships. In the "Canopus" type, the Admiralty wished to effect a reduction in the displacement, and consequently in the cost of the ships, but while reducing the displacement to 12,500 tons, they also required a speed of 18 knots and a heavy offensive armament; consequently the belt had to be reduced to 6 inches, the protection of the ship being sacrificed to speed. In the "Formidable" class, the displacement having been raised to 15,000 tons, a speed of 18 knots has been attained, while at the same time the thickness of the belt has been increased to 9 inches, a thickness, however, which is still inadequate. In the "Duncan" class two faults have been, he considers, committed: the displacement has been again reduced to 14,000

¹ M. de Lanessan's criticisms show that the weak points in our ships are well known to the French Naval Authorities.—TRANSLATOR.

² The author has overlooked the fact that the whole of the secondary armament of the "Royal Sovereign" is being now protected by casemates.—TRANSLATOR.

tons, while the speed has been raised to 19 knots; this has consequently necessitated the reduction of the belt to 7 inches.

It is not possible, M. de Lanessan thinks, to cite better examples of the necessity of giving large displacements to ships when speed, combined with great offensive and defensive power is demanded. By neglecting these principles, the English Admiralty has given the fleet eighteen battle-ships which could not hope to engage successfully the new French 14,865-ton battle-ships, given equality of *personnel*.¹

M. de Lanessan admits, however, that although the new French ships will have nothing to fear from the English, yet they are not without their faults, which may be set against the defects in the English ships; but in a general way he thinks that had France not hesitated so long in adopting large displacements² for her ships, the French battle-ships on the whole would be superior to the English, as in all that concerns the primordial qualities they are better, that is in handiness, offensive power, disposition of armour, and the protection of the secondary armament.

With regard to the great superiority in numbers of her battle-ships which Great Britain possesses, it is so great, the author admits, that it must be recognised and can only be deplored. It arises, unfortunately, from the fact that for several years the building of battle-ships in France was stopped, while England on the other hand was displaying great activity in increasing the number of her armoured units.

But other things have to be taken into consideration, he contends, than the mere counting of units; if England possesses battle-ships far in excess in numbers over France, she has also far more extensive interests to defend. The mere enumeration of her battle-ships and cruisers does not give an exact idea of the forces of which she will be able to dispose in European waters on the day war breaks out between her and a great Continental Naval Power. In the first place, her commercial and political interests in different parts of the globe are so considerable, while her mercantile marine is represented in every sea by so large a fleet of vessels, that she is obliged to employ in all quarters a number of powerful ships. She even employs in this way a certain number of her battle-ships.

In the second place, in European waters England is compelled to divide her strongest squadrons between the Channel and the Mediterranean, if she does not wish to expose herself to greater dangers. She has to protect Gibraltar, Malta, and Egypt. In the Channel she requires powerful squadrons to prevent her commerce being ruined and attempts being made to land on her coasts. In short, England

¹ It should be noted, however, that M. de Lanessan, in his comparison, has overlooked the new battle-ships of the "King Edward VII." class, which are quite equal, if not superior, to the new French ships, and that the bulk of these will be ready as soon as the new French ships are.—TRANSLATOR.

² The whole gist of M. de Lanessan's argument is to show that, in his opinion, the day of medium-sized battle-ships is over; he will have nothing to do with so-called second-class ships, as it is only by a heavy displacement that the necessary qualities for a battle-ship of to-day can be secured.—TRANSLATOR.

requires many more battle-ships than France in view of the numerous interests in all parts of the globe she has to defend.¹

II.—THE BATTLE-SHIPS OF THE TRIPLE ALLIANCE.

M. de Lanessan next proceeds to discuss the combined fleets of Germany, Austria, and Italy. He considers that Germany, owing to the nature of the waters in which her fleets may have to operate, will have to content herself with ships of smaller displacement than either France, England, or Italy are compelled to do. Of the twenty-nine battle-ships Germany had completed or building in the beginning of 1902, none exceeded 12,000 tons, and in all of them he considers the protection is inadequate, due to the too small displacements. As her authorities wished to have a powerful armament, and a speed equal to the French and English ships, armour protection had to be sacrificed. Even in the later types, where the displacement has been increased to 11,700 tons, the same mistake has been made, and the ships are vulnerable even to the 6·4-inch Q.F. guns carried in the French ships, while the ships of the new French programme are in every way incontestably superior to them.²

On the other hand, he holds that none of the battle-ships, which Italy and Austria can dispose of, are superior to those of which the French squadrons are at present composed, while they fall far below the ships of the new programme.

He considers that there is nothing in either of the Navies of the Triple Alliance that France need envy. Although numerically the three fleets together may outnumber the French, yet the nature of the units of which the fleets are composed, and the conditions under which they would have to operate in the event of a war with France, are of such a nature that she can regard the coalition with equanimity. The Austrian battle-ships, and some of the German ones, are only coast-defence ships, of which type France has several powerful ones. It would be a matter of supreme difficulty in the event of a war with France for the Austrian and Italian squadrons to effect a junction in the Mediterranean with the German, which would be held in check by the French Northern Squadron. Germany so well understands this, that, for many years past, she has given up maintaining a squadron in the Mediterranean, although she did so at one time. The French fleet can thus carry out any operations that may be desired in the Mediterranean, as the Austrian and Italian squadrons are too weak to interfere effectively.

"Germany," M. de Lanessan continues, "on the other hand, has to bear in mind that in the North Sea she can only depend upon herself alone, as she can get no assistance from either of her two Allies. That is why she is carrying through a programme which will give her, when completed, a number of battle-ships equal to ours. But

¹ Our strategists will hardly take the same view of the situation that M. de Lanessan does, as he seems to contemplate the old heresy of breaking the fleet up into a number of detached squadrons, to be distributed for the defence of various isolated places.—TRANSLATOR.

² As M. de Lanessan overlooked the ships of our "King Edward VII." class, so he seems to have overlooked the fact that the Germans have increased the displacement of their latest ships to 13,200 tons.—TRANSLATOR.

as, from a fighting point of view, these ships are inferior to ours of the new programme, we shall be in 1907, when the programme is completed, stronger than we are now, and if we continue to follow out the advice of the Superior Council of the Navy, and replace our old ships by new units, as powerful relatively as those we are now building, we shall still be superior to Germany in 1916, when her whole programme is to be completed.

NUMBER OF BATTLE-SHIPS REQUIRED BY FRANCE.

It now remains to determine the number of battle-ships which France ought to possess in order to be in a position to face all the necessities of a naval war in European waters, whether against England or against the Triple Alliance. In 1896 originally, then again in November, 1899, the Superior Council of the Navy fixed at twenty-eight the number of first-class battle-ships, as being the indispensable *minimum* we should require, which would allow of the formation of four squadrons of six ships each, with an additional reserve battle-ship for each. The Council gave it as their opinion at the same time that the battle-ships should in every respect be as powerful as possible, and they advocated the immediate construction of six 14,865-ton battle-ships (of the "République" type, already described), which they considered as superior to all similar ships in other Navies. In their view, these six ships were called for to form an homogeneous squadron, and in due course it would be necessary to replace the ships in the remaining three squadrons by others equally homogeneous, and with the *maximum* of offensive power and protection to be obtained at the time they are laid down.

In other words, as soon as each of the new battle-ships voted by the Chamber is completed, it ought to be replaced on the slips by a new unit for a second group of six ships, which will form the second squadron, and so on, until the ships of each squadron are composed of the latest ships, each re-organised squadron being, if possible, stronger than those which precede it. The obsolete ships will be organised as squadrons of the second line, which can either be used in case of war to supplement the four first-rank ones, or can be stationed as permanent forces at certain points of the coast.

By taking care to lay down each year a new battle-ship, we ought to be in a position to maintain our four squadrons of the first line in an undoubted position of superiority to the analogous ships of foreign countries. But on no consideration must the great principle which we have enunciated be violated, that in battle-ships the two predominant qualities must always be *offensive power* and *adequate protection*. If this principle is carried out, while our engineers and gunners continue, as they are doing to-day, to take advantage of every advance made in the different branches of naval science, we may at least be certain that our new ships, if not more powerful, will at least not be inferior to those of our rivals.

There is, however, one point which it is essential that we should bear in mind, and that is, that for France it is of paramount importance to consider the fighting efficiency of each unit, rather than their number.

In the first place there is a notable economy in building one very powerful ship, which combines in a high degree offensive and defensive qualities, rather than two weaker ones, although they may cost some-

what less. We need only look at our own armoured fleet to be convinced that we committed a great fault when from motives of economy we built battle-ships and armoured cruisers of smaller displacement than were advocated by the Superior Council of the Navy, and this when the English Admiralty had adopted large displacements for their ships for the last fifteen years. If we had expended some millions more on the battle-ships and armoured cruisers laid down since 1889, the period when the Council demanded 14,000-ton battle-ships, we should to-day possess a fleet scarcely less numerous but infinitely more powerful than we have. This has been the opinion of our naval officers of rank for a long time, one of whom, an officer of the highest standing, quite recently observed, speaking of the "Charlemagne" and her two sisters, that he "regretted to be obliged to say that these battle-ships showed no signs of any real advance over their immediate predecessors."

There is, moreover, a considerable advantage from the point of view of the *personnel* in constructing fewer but larger and more powerful units, as there is a distinct economy in the number of officers and men required. This economy is of all the more value, as the difficulty in recruiting certain classes of men required becomes greater, while the number of small torpedo-vessels is continually increasing. In other Navies besides ours, however, there is a difficulty in obtaining skilled artificers, for not only are the numbers insufficient, but the men are not so well trained.¹

The same deficiency exists also in the numbers of our gunners. As we cannot by voluntary enlistment obtain a sufficient number, we are compelled to fall back upon the *Inscription Maritime*, the training of the men of which is always very defective; it is only with great trouble that they can be turned into gunners, and even then, in spite of their undoubted good qualities, there are constant complaints as to their inefficiency, and their want of mechanical knowledge, which is shown especially in their inability to keep the different parts of the gun-mountings in their charge in proper order. There is consequently a demand for some change in the system of entering, training, and promotion of the gunner *personnel* in the service. Under these circumstances, and in view of the growing dislike of the nation to compulsory service, we must not commit the blunder of multiplying without absolute necessity the large ships of our fleet, as there is no doubt whatever that the recruiting for the special branches of the fleet will become even more difficult in the future than it is to-day. It is essential that the Navy should create a *personnel* for itself, by training boys, recruited where possible from the families of seamen, as specialists in gunnery, torpedo, and mechanical duties; and since the expense will be considerable, the number must be limited as much as possible.

In conclusion, we must insist once more upon the necessity of building units, which will combine a *maximum* of the qualities peculiar to their class, and that it is above all of paramount importance for us to build, even at some pecuniary sacrifice, a rather smaller number of battle-ships of heavy displacement with great offensive and defensive powers, in preference to a larger number of less powerful vessels of only medium displacement, although they may cost less.

¹ In a note, the author refers to the complaints which are continually being made in the English service papers as to the inadequate engine-room complements in all classes of our ships.—TRANSLATOR.

We shall be able to do with a smaller *personnel*, a matter of some importance when our training schools for special branches alone cost more than six million francs a year, and then only too often turn out men who are not fit for their duties.

As France in these days entertains no ideas of aggression against any of her neighbours, she must strive to attain by the organisation of her fleet, as by that of her Army, to make herself sufficiently strong to resist aggression. Looking at the question from all sides, it seems to us that the Superior Council of the Navy in deciding on an organisation of four squadrons, and limiting the number of our battle-ships to twenty-eight powerful first-class ones, have acted wisely. With these four squadrons grouped in the Channel and Mediterranean, according as the political situation may demand, with the second-class battle and coast-defence ships forming a second line, we shall hold a position quite strong enough for all probable combinations we may have to face.

(To be continued.)

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made : Captains—J. E. C. Goodrich, M.V.O., to "Grafton," as Commodore Second-class, to command Pacific Station; D. Beatty, D.S.O., to "Arrogant"; A. G. Tate to "Hannibal"; E. J. Fleet to "Sans Pareil"; S. R. Fremantle to "Albion"; C. W. Winnington-Ingram to "Mildura"; H. R. Robinson to "Tauranga"; J. G. Hewitt to "Wallaroo" H. B. Jackson, F.R.S., to "Duncan." Commanders—H. Du C. Luard to "Barrosa"; H. G. Smith to "Tartar"; H. St. G. Clive to "Satellite"; C. R. de C. Foot to "Psyche."

The first-class battle-ship "Cæsar" arrived at Portsmouth from the Mediterranean on the 4th ult., and paid off at that port on the 6th inst. The first-class battle-ship "Duncan" commissioned on the 8th inst. at Chatham, and is to proceed to the Mediterranean, where she takes the place of the "Cæsar." The first-class battle-ship "Goliath," from China, paid off at Chatham on the 7th inst. The first-class cruiser "Diadem" and second-class cruiser "Scylla" commissioned at Chatham on the 23rd ult. for relief service; they take out new crews for the third-class cruisers "Wallaroo," "Tauranga," "Katoomba," and "Mildura," on the Australian Station, which ships are to be recommissioned at Sydney; the "Scylla" left on the 1st inst., and the "Diadem" on the 3rd inst. for their destination.

Steam Trials.—The armoured cruiser "Cumberland," belonging to the "County" class, and built by the London and Glasgow Engineering and Iron-Shipbuilding Company, Glasgow, has recently completed her official trials on the Firth of Clyde, with most satisfactory results. This vessel belongs to the second series of ships of this class. The first four, the "Kent," "Essex," "Monmouth," and "Bedford," were the subject of an interesting series of propeller experiments during their steam trials. The second series includes the "Berwick," "Cumberland," "Donegal," "Lancaster," "Suffolk," and "Cornwall," the two latter building at the Royal Dockyards at Portsmouth and Pembroke respectively. This second series has proved much more successful than the earlier vessels, largely as a consequence of the results of the trials influencing the design of the screw propeller, and the designed speed of 23 knots has, in practically all cases, been exceeded by something like 5 sea mile per hour. The "Cumberland," the latest of the vessels tried, attained on her eight hours' run a speed of 23.7 knots, as the mean of four runs between the Ailsa Craig and the Cumbræ Lights, on the Firth of Clyde. The venue of the trials is due, of course, to the new arrangement, under which all vessels are completed for commission at the works of the contractors, instead of being sent to the dockyards for trial and completion.

The "Cumberland" is a vessel 440 feet long, 66 feet beam, and with a mean draught of 24 feet 6 inches she displaces 9,800 tons. She has 4-inch armour on the broadside, and is armed with fourteen 6-inch guns

and thirteen smaller quick-firers. The engines, which are of the triple-expansion type with four cylinders, were designed to run at 140 revolutions—equal to a piston speed of 980 feet per minute, to give a power of 22,000-I.H.P. The high-pressure cylinder is 37 inches in diameter; the intermediate, 60 inches; and the two low-pressure are each 69 inches; the piston stroke in all cases being 42 inches. The boilers are of the Belleville type, 31 in number, and it may be said here that these worked quite satisfactorily throughout the series of trials. The results are given in the appended table:—

Steam Trials of H.M.S. "Cumberland" in the Irish Sea.

Date	August 26th and 27th. 30 hours at one-fifth power.		August 28th and 30th. 30 hours at eight-elevenths power.		September 2nd. 8 hours at full-power.	
	Forward.	Aft.	Forward.	Aft.	Forward.	Aft.
Draught of water	24 ft. 1½ in.	25 ft. 1 in.	24 ft. 1 in.	25 ft. 1 in.	24 ft.	25 ft. 1 in.
Steam in boilers	240 lbs.		274 lbs.		286 lbs.	
	Starboard.	Port.	Starboard.	Port.	Starboard.	Port.
	fwd. aft.	fwd. aft.				
Vacuum	27 in.	27 in.	27½ in.	27½ in.	26½ in.	26½ in.
Revolutions per minute	89.5	87.8	132.9	132.8	145.2	142.7
Mean pressure	41.3 lbs.	40.7 lbs.	94.6 lbs.	97.6 lbs.	105.2 lbs.	106.2 lbs.
High	15.15	15.7	29.1	32.1	41.25	41.8
Intermediate	5.9	6.96	13.2	14.0	19.06	18.8
Low forward	8.4	8.6	13.32	13.9	18.84	19.05
Low aft	8.44	8.16	2.855	2.870	3.484	3.459
I.H.P.	815	828	2,317	2,569	3,594	3,580
High	418	421	1,401	1,474	2,194	2,129
Intermediate	382	389	1,410	1,465	2,170	2,159
Low aft						
Mean total I.H.P.	2,459	2,454	7,983	8,469	11,442	11,327
Collective I.H.P.	4,913		16,452		22,769	
Mean air pressure	Nil		Nil		2 in.	
Speed of vessel on measured mile	15.241 knots.		22.138 knots.		23.7 knots	
Coal consumption per I.H.P. per hour	2.1 lbs.		1.98 lbs.		2.01 lbs.	

It will be noted that in all cases the vessel was at her mean low draught, and that the speed for one-fifth power (4,913-I.H.P.) was 15.24 knots; for 16,452-I.H.P. it was 22.138 knots; and at full power (22,769-I.H.P.) it was 23.7 knots, which is exceptionally satisfactory. The coal consumption during the three trials averaged about 2 lbs. per I.H.P. per hour. On the eight hours' full-power trial the power indicated by the engines ranged between 21,981-I.H.P. and 23,582-I.H.P., the latter during the third hour of the trial; this was with the engines making a mean of 145.5 revolutions, and with a mean steam pressure at the engines of 230 lbs. During the 30 hours' trial at 22 knots special observation was made as to the water consumption, and it was found that the water used by the main engines worked out to a mean of 15.40 lbs. per I.H.P., and by the auxiliary engines to 1.77 lbs., giving a total of 17.17 lbs. per I.H.P. per hour. The total loss of water was equal to 2,965 tons per 1,000-H.P. per 24 hours; but the whole of this was made up during the trials, and is included in the coal consumption, the evaporators in the 30 hours producing 65.5 tons, which considerably exceeded the actual loss.

The second-class cruiser "Challenger," built at the Chatham Dockyard, has just completed her official trials, which are of peculiar interest in view of the fact that she is the first cruiser built originally with Babcock and Wilcox boilers. Special arrangements were made for measuring the water consumption, as well as the amount of fuel used on the respective trials. The vessel is of 5,880 tons displacement, with a mean draught of 21 feet 3 inches, the length between per-

pendiculars being 355 feet. She is of the protected-deck type, and mounts eleven 6-inch breech-loading guns, with fifteen smaller quick-firers. But the chief interest is associated, as we have said, with the machinery installation. The contractors for the machinery were the Wallsend Slipway and Engineering Company, Limited, Newcastle-on-Tyne, and they gave the order for the boilers to the Babcock and Wilcox Company. The engines are of the triple-expansion four-crank type, the high-pressure cylinder being 28 inches in diameter; the intermediate, 45 inches; and the two low-pressure cylinders each 52 inches. The stroke is 32-inch.

There are 18 boilers in the ship, the collective grate area being 881·2 square feet, and the total heating surface 31,872 square feet. The trials were conducted during stormy weather, but the ship behaved well, and the machinery worked most satisfactorily. As usual, there was a 30-hours' trial at about one-fifth power, a run of the same duration at about 70 per cent. of the total power, and an 8-hours' trial at the full output of 12,500-H.P. The results are set out in the appended table :—

Results of Official Trials of H.M.S. "Challenger."

Total grate surface	...	...	...	...	881.2 square feet.
Total heating surface	...	...	...	...	31,872 "

	8 hours.	30 hours.	30 hours.
Revolutions per minute	176.9	160.1	105.6
I.H.P.	12,781	8,972	2,636
Coal consumption per I.H.P. lbs.	1.78	1.74	1.75
Water " " " " " " "	17.5	17.6	—
Steam pressure in.	242	241	241
Draught " " " " " " "	.84	.3	Nil
Heating surface per I.H.P. sq. ft.	2.49	3.55	6.04
Coal per square foot of grate area per hour ... lbs.	25.8	17.7	10.48
Water evaporated per square foot of heating surface)	7.02	4.9	3.59
Water evaporated per lb. of coal "	9.84	10.1	—

It will be noted that the coal consumption varied only between 174 lbs. and 178 lbs. per I.H.P. per hour, and that the steam consumption of the engines was remarkably uniform at 17.5. It should perhaps be noted, although well-known to all acquainted with naval practice, that both coal and water consumption is for the whole of the machinery on board; while the H.P., upon which the rates of consumption are based, is the actual power developed only by the main engines. On the 30-hours' trial at 70 per cent. of the total power—which is supposed to represent the power and speed at which the vessel can steam so long as the coal in the bunkers may last—the boilers evaporated 10.1 lbs. of water from and at 212° Fahr. per pound of coal consumed, when the rate of combustion was 177 lbs. per square foot of grate. On the full-power trial, with an air-pressure in the stokeholds of 0.84 inch, the rate of combustion was increased to 258 lbs. per square foot of grate area per hour, but the evaporative efficiency fell off very slightly, being 9.84 lbs. of water per pound of coal.—*Engineering*.

The new torpedo-boat destroyer "Itchen," built by Messrs. Laird Brothers, of Birkenhead, has completed successfully her series of official trials. A four hours' coal-consumption trial at 25½ knots was first carried out, and on the full load displacement the speed was obtained with about 6,800-I.H.P., the consumption for four hours being under 30 tons. On

a further trial of 12 hours' duration at 13 knots speed the consumption was at the rate of 1·6 lbs. per I.H.P. per hour. At the full-speed trial the vessel maintained a speed of 25·64 during a four hours' run.

Admiralty Surveys.—The report by Rear-Admiral Sir William Wharton, the Hydrographer of the Navy, of the work performed by his department during the year 1902 in the examination and charting of the seas and coasts in various parts of the globe has been issued as a Blue Book [Cd. 1603]. Eleven vessels, 78 officers, of whom 49 are special surveyors, and 781 men were employed on this service. Four of the vessels were engaged in surveying work in home waters, one on the coast of Newfoundland, one on the West Coast of North America, one in the Mediterranean, two in China waters, one on the coast of New Zealand, and one in the South Pacific. The cost of the re-survey of the New Zealand coasts was shared between the Imperial and the Colonial Governments. A naval surveyor was also employed, with the sanction of the Admiralty, in carrying out a survey under the Government of India. During 1902 no less than 318 rocks and shoals which were dangerous to navigation were reported. Of these, 39 were reported by surveying vessels, 20 by other British men-of-war, 19 by vessels of the British and foreign mercantile marine, 11 were discovered by ships striking upon them, and 223 were reported by Colonial and foreign Governments. During 1902 charts were prepared of 1,924 miles of coast line, and an area of 12,661 square miles was sounded; while in addition the officers of ships other than surveying vessels contributed a large number of plans and sketch surveys of places they had visited. The Antarctic Expedition, fitted out under the joint auspices of the Royal and the Royal Geographical Societies, was supplied by the Admiralty with a complete outfit of instruments, and sounding and dredging gear, and has sent home a few soundings obtained on the passage to New Zealand. The relief ship "Morning" was also supplied with some instruments and sounding gear. In home waters the re-survey of Loch Roag revealed many new rocks; off Dover, where the new Admiralty Harbour works are in progress, changes were found to have taken place in the shifting shingle and sand of which the bottom is composed, and in a survey of Queenstown Harbour two rocks and a shoal were discovered. On the West Coast of Vancouver's Island the "Egeria" found a number of articles belonging to the sloop "Condor" on the shores between Barkley and Clayoquot Sounds, and the result of her search proved only too plainly that the missing ship foundered in a heavy gale which occurred on December 3rd, 1901. In the Mediterranean the "Goldfinch" resounded the water on the eastern side of Gibraltar out to the 15-fathom line, and took detailed observations of the surface currents. In China, the International Commission of Maintenance and Improvement of the Peiho having asked for a survey of the entrance to the river, the "Rambler" carried out the work. The survey showed that at the highest water the depth is 12½ feet, but at low water springs the bar is almost dry. The "Waterwitch" was employed in surveying the waters included in the sphere of British influence around Wei-hai-Wei. Considerable progress was made with the re-survey of New Zealand waters, and a good deal of useful work was done by the "Dart" in the Southern Pacific. During the year 96 charts and plans have been issued from the Hydrographic Office, 26 plates have been improved by new plans, corrections and additions were made to 147 plates, 5,220 corrections were made to plates of existing charts, and 43,180 charts received minor corrections at the

hands of the draughtsmen. The number of charts printed in 1902 was 522,688.—*Times*.

FRANCE.—The following are the principal appointments which have been made: Capitaines de Vaisseau—C. P. Poidloue to command of Reserve Division of the China Squadron; J. L. Le Pord to "Suffren"; A. Schlumberger to "Tage"; E. M. Amelot to "Dupleix"; E. Goudot to "Amiral Gueydon."—*Journal Officiel de la République Française*.

Vice-Admiral Gourdon hoisted his flag on board the first-class battleship "St. Louis" at Toulon, on the 15th ult., in command of the Mediterranean Squadron; he will transfer his flag to the new first-class battleship "Suffren," on that ship's arrival at Toulon, after the completion of her trials at Brest.

Vice-Admiral Bayle, the new Commander-in-Chief in China, arrived at Vladivostok by the Siberian Railway on the 31st August, and hoisted his flag on board the second-class cruiser "Bugeaud," pending the arrival of his proper flag-ship, the "Montcalm," which occurred on the 6th, when the Vice-Admiral's flag was transferred to her.

Rear-Admiral Péphau struck his flag on board the "Bouvines" as Second-in-Command of the Northern Squadron, on the 31st August, at Lorient, and his successor, Rear-Admiral Rouvier, hoisted his on board the same ship on the following day.

The first-class armoured cruiser "Dupleix," commissioned at Rochefort on the 9th ult. for service as flag-ship of the Atlantic Division, relieving the first-class cruiser "Tage"; she left on the 22nd September for La Horta, in the Azores, where she arrived on the 27th; the "Tage" arrived at La Horta the same day, and Rear-Admiral Rivet transferred his flag on the 1st inst. to the "Dupleix," and left on the 5th inst. for the West Indies. The "Tage" is to pay off at Brest.

The ships of the Northern Squadron, with the exception of the torpedo-boat destroyers which are to remain fully manned, had their crews placed on a two-thirds effective on the 1st inst. for the winter months. The first-class armoured cruiser "Amiral Gueydon" commissioned on the 8th ult. for service in China; on her way out she will call at Toulon, from whence she will tow two of the new first-class torpedo-boats to Diégo-Saurez where they are to be stationed.

The Recall of Vice-Admiral Maréchal.—The naval sensation of the month in France has been the recall of Vice-Admiral Maréchal, Commander-in-Chief of the Squadron in the Far East, and his subsequent compulsory retirement. Though all the facts of the case, which include the correspondence which has passed between the Minister of Marine and the Admiral are not before the public, the general opinion appears to be that the Admiral has been treated most harshly, and that the Minister of Marine has acted in a most arbitrary manner.

The case, as far as it is known, is as follows:—A Lieutenant Hourst, in command of one of the river gun-boats on the station, was blamed and recalled by the Minister of Marine, without consulting the Admiral, for exceeding his orders by going to the rescue of the French missionaries in Se Tchouen at the time of the troubles in that Chinese province. Admiral Maréchal defended his subordinate, knowing that Lieutenant Hourst had acted in a most prompt, brave, and gallant manner in going at great personal risk to the assistance of the missionaries, with only three men at his back. This has since been allowed, and the Minister

of Marine has been obliged to exonerate Lieutenant Hourst from all blame, and appears then to have vented his wrath upon the Admiral. The latter's fault, admitted by himself, is that he espoused the cause of his subordinate in too warm a manner, and that his letter to the Minister was not sufficiently respectful in tone. This fault, however, hardly seems to warrant his immediate recall, and the leaving of the French Squadron at a disturbed time without a commander.

On arriving in Paris, and reporting himself at the Ministry of Marine, the Admiral was treated with no consideration—he was left waiting for some time in an ante-room, and eventually told that the Minister did not wish to see him, and would communicate with him by letter. Such treatment to an officer of his high rank might well incense the Admiral, but he appears to have borne it with becoming dignity. A few days later he received a short letter from the Minister of Marine informing him that by decree of 23rd, he was placed on the retired list (the official term is "*mis en non-activité par retrait d'emploi*," and appears to include a prohibition to wear uniform). No explanation of any sort has been given to the Admiral regarding the reason for this further punishment, but it is understood to be the official reply to a further letter which the Admiral wrote, before leaving China, on quite another matter, concerning which there has been also a disagreement between himself and the Minister of Marine, and where the Admiral again appears to have been completely in the right, though he expressed his views in language more forcible than politic. Great sympathy is shown for him, and the whole of the French Navy is in his favour. The matter is not likely to be allowed to rest here, and more will be heard about it. The Admiral, it is said, will appeal to the President.

The Failure of the "Jurien de la Gravière."—Official reports received at the Ministry of Marine show that this vessel is likely to prove one of the failures of the French Navy. We have before now often referred to the difficulty which was experienced in bringing her steam trials, which lasted over the best part of a year, to a successful conclusion.

Like the "Guichen" and "Châteaurenault," she was built as one of the so-called "commerce-destroyers," with a displacement of 5,685 tons, and was intended to have a speed of 23 knots. She was laid down as long ago as November, 1897, at Lorient, was launched in August, 1899, but it was not until last year that she was ready to begin her trials. She is fitted with small-tube water-tube boilers, of the Du Temple-Guyot type, which from the very first gave an infinity of trouble, and it was only with great difficulty that she at last attained her designed speed of 23 knots during a two hours' run. She left Lorient for the West Indies on the 24th July, with orders to cross the Atlantic at a speed of 15 knots, but before she had run twenty-four hours, she had expended over 100 tons of coal, her total supply when filled up everywhere being only 900 tons. It became necessary to ease down, first to 12 knots and then to 10. In his report, her captain says:—"With ten boilers in use it was impossible to keep the engines working at 120 revolutions. The leakage of water from the tubes was continual, and they became so foul that it became necessary to reduce the revolutions first to 110, and then to 90, giving the ship a speed of only 10 knots. The engineers complain that it is impossible to stoke properly, because the coal is distributed in 70 bunkers, of which 50 are for the reserve stock. The temperature of the engine-room and stokeholds ranged from 100° to 150° Fahr., and the engineers and stokers had to be continually relieved, as they were

unable to stand the heat. Although she is supposed to steam 23 knots, it is doubtful if she could maintain a speed of 20 knots even for three hours; she is supposed to have a radius of action of 9,300 miles at 10 knots, when her full supply of coal, 900 tons, is on board, but as things are at present, her radius of action is but little over 4,000 miles.

The French have been very unlucky with their 23-knot cruisers, not one of which, even when after long trials the 23 knots has been reached, has been able to maintain it. It may be remembered that the "Guichen," the first to be completed, a vessel larger than the "Jurien de la Gravière" by some three thousand tons, when ordered to China with all despatch on the outbreak of the Boxer disturbances in the summer of 1900, was only able to make an average of 14.5 knots, and was beaten easily by the second-class cruisers "Dido" and "Isis," which were ordered from the Mediterranean to reinforce Sir S. Seymour's squadron at the same time.

New Ships and Dockyard Notes.—Cherbourg.—The new second-class battle-ship "Henri IV." has at last completed her trials, and her engines have been formally taken over; she will now be commissioned to take the place of the coast-defence ship "Valmy" in the Northern Squadron. During her last run, on the 4th ult. to test her machinery, some gun trials took place off Cherbourg with the view of testing the habitability of the after main turret mounting the 274-mm. (10.8-inch) guns, while the 138-mm. (5.45-inch) gun in the upper turret over it was being fired. Some sheep were enclosed in the lower turret, and twenty rounds were fired from the upper gun. After the trial, the sheep were all found alive, but in a dazed condition. Both the *Yacht* and *Petit Var* agree that the results of the firing were extremely unsatisfactory. Considerable difficulty seems to have been experienced in ramming the projectiles of the 27-cm. (10.8-inch) guns home, and it took forty minutes to fire five rounds from these guns, one round in eight minutes. The guns in question are 45-calibre guns, of the 1893-96 model. Originally the powder chamber was some 50-mm. diameter larger than the calibre of the gun, but the variations in the internal pressures of the smokeless powder were found to vary considerably, and some fear was expressed as to the resisting power of the breech blocks, and with the view of diminishing the pressure upon them, the powder chamber was reduced until it was only 9-mm larger than the bore; the weight of the charge was somewhat increased, and it was hoped that a high initial velocity would be secured, with an increased resisting strength in the breech blocks. The result, however, is that it is now extremely difficult to load the guns. It seems also certain that the 5.4-inch gun in the upper turret cannot be fired over the complete arc without the risk of injury to the men working the 10.8-inch guns in the lower turret.

The new first-class armoured cruiser "Desaix" is continuing her trials satisfactorily. On the 26th ult. she made a six hours' run, with her twelve foremost boilers at nominal I.H.P. of 4,500; the engines really developed 4,782-I.H.P., which gave a speed of 14.9 knots. The temperature in the stokehold was only 29° C. (84.2 Fahr.), no ventilators being used. The consumption of coal per square metre of grate surface was 60-kg. (132.24 lbs.), and per H.P. per hour 642-gr. (128 lbs.) At the next trial, during a twenty-four hours' run, at the nominal I.H.P. of 10,000, the engines developed 10,500-I.H.P., giving a speed of 18.6 knots. The coal consumption per square metre of grate surface was 72-kg. (158.68 lbs.), and per H.P. per hour only 677-gr. (135 lbs.), instead of the from 750-gr. (15 lbs.) to 800-gr. (16 lbs.) allowed by the contract. The "Desaix" has twenty Belleville boilers, fitted with economisers.

The new first-class armoured cruiser "Amiral Aube" has commenced her preliminary trials. In a four hours' run at natural draught the engines developed 14,728-I.H.P., and she maintained a speed of 19.7 knots; the coal consumption was 87-kg. (191.74 lbs.) per square metre of grate surface, and 670-gr. (1.34 lbs.) per I.H.P. per hour. Later she made a short run at full speed under forced draught, when the engines developed 19,305-I.H.P., the contract I.H.P. being 20,500, which was thus not reached; her coal consumption for this run rose to 180-kg. (396.72 lbs.) per square metre of grate surface. The speed attained was not recorded. The ship has twenty-four Belleville boilers, fitted with economisers. At a coal-consumption trial, with the engines nominally developing 10,000-I.H.P., the actual I.H.P. developed was 11,260; the coal consumption per square metre of grate surface was 59-kg. (130 lbs.), and per I.H.P. per hour 516-gr. (1.03 lbs.).

Work is proceeding satisfactorily with the new first-class armoured cruiser "Jules Ferry," and her belt armour has been fixed; this was done in the incredibly short space of time of five days, and the dockyard here now holds the record for rapidity in this work.

The new torpedo-boat-destroyer "Catapulte" commissions on the 26th inst. to relieve a sister-vessel, the "Harpon," in the Squadron of the North; the "Harpon" is to take the place of the "Grenadier" in the *Défense Mobile* at this port.

The coast-defence ship "Jemmapes" has been on a trial trip after repairs; although the engines and boilers worked satisfactorily, yet owing to the bad ventilation of the stokeholds the heat was so great that it was found necessary to relieve the stokers every three-quarters of an hour, the temperature rising to 30° C. (140° Fahr.).

The new torpedo-boat destroyer "Dard" was launched at Rouen on the 10th ult., from the Normand Yard; she took the water completely finished, and has arrived at this port to undergo her official trials. She has a displacement of 302 tons, her engines are to develop 6,300-I.H.P., giving a speed of 28 knots.

The new torpedo-boat destroyer "Bombarde" has completed her coal-consumption and speed trials in 25 days, in which she beat the record for the French Navy. She began her coal-consumption trials on 7th September, during which she made runs at 24, 26, 28, and 30.5 knots. On 17th September, going at full speed, she made a run of 40 minutes at 31.7 knots, when a feeding-pump was thrown out of gear by the quick revolutions of the engines and the trial stopped. If the feeding-pumps were worked independently it is believed that a speed of 32 knots could be attained. The trial at full-speed was resumed on 22nd September, when a speed of 30.5 knots was made, or 2.5 knots over the contract speed.

Brest.—No vessel in the French Navy has been more discussed lately than the armoured cruiser "Ernest Renan." Though her keel is not yet laid, and it is doubtful if she even exists on paper, her notoriety is due to the vacillation of the Minister of Marine, and the question is asked now, will she ever be commenced? Quite recently it was stated she would be constructed at St. Nazaire, but now it is said she is to be built at Brest, and the machinery only will be made at St. Nazaire. The "Ernest Renan" originally formed part of the building programme for 1900, and in the Budget of 1902 a sum of 2,409,020 francs was appropriated for her, and she was to have been completed in 1905, as a cruiser of 12,530 tons and 27,500-H.P., of the "Gambetta" class. The design, by order of the Minister of Marine, was, however, altered, the tonnage increased to

13,644, and the H.P. to 36,000, and speed from 22 to 23 knots. These changes made it impossible to commence her in 1902, and a fresh vote was taken for her in the Budget of 1903 for 2,179,536 francs. No date is now given for her completion. It is believed that she will be built at Brest, and that she will be laid down on the slip vacated by the new battle-ship "Démocratie," when that ship is launched in February next.

The new first-class battle-ship "Suffren," which ought ere this to have left for the Mediterranean, where, according to the latest arrangements, she is to replace the "St. Louis" as flag-ship of Vice-Admiral Gourdon, has not yet succeeded in completing her steam trials, as in her last twenty-four hours' run the trial had to be stopped owing to a breakdown of her central engine. The trial, it was hoped, would be resumed again on the 7th inst.

The new first-class armoured cruiser "Marseillaise," which is to relieve the "Dupuy de Lôme" in the Northern Squadron, has not yet been commissioned, but the "Dupuy de Lôme" was paid off at this port on the 20th ult., and placed in the Dockyard Reserve, for the complete overhaul and repairs she is to undergo. In view of the determination to fit the ship with small-tube water-tube boilers of the Normand-Sigaudy type, an engineer, writing to the *Petit Var*, points out that all the large cruisers fitted with small-tube water-tube boilers have proved failures, notably the "Jeanne d'Arc" and the "Jurien de la Gravière," neither of which can maintain her designed speed, owing to the rapidity with which the tubes foul. He calls attention to the fact that not a single large vessel in the English Navy is fitted with small-tube boilers, and that even Yarrow has had to completely modify his type of boiler and substitute large tubes for small in the boilers he is supplying for some of the new ships.

Work on the new first-class battle-ship "Démocratie" is being pushed on with feverish haste, so that the ship can be launched in February next: a large number of additional workmen have been drafted to her, and it is hoped that when she takes the water she will be in a more forward condition than any battle-ship has been in before when launched.

The workmen in the dockyard here have been much on their mettle lately in competition with those at Cherbourg. It is stated by the *Moniteur de la Flotte* that only twelve days and a half were taken to fix the side armour of the new battle-ship "République," which represents a total weight of some 2,000 tons, as against the 1,100 tons weight of armour of the "Jules Ferry," in placing which the Cherbourg Yard achieved such a record recently. The armour of the new first-class cruiser "Marseillaise" was placed in position in sixteen days.

The new destroyer "Escopette" has been detached from the Squadron of the North, and is to become the *Divisionnaire* of the *Défense Mobile* at this port, relieving the "Lancier," a much older vessel, which is to be placed in the Second Category of the Reserve.

Lorient.—The new first-class armoured cruiser "Condé" commissioned on the 15th ult. for her trials. The new first-class armoured cruiser "Gloire" has had her trials interrupted, owing to hot bearings during her last full-speed run on the 16th ult. The trials of the new destroyer "Pistolet" have been satisfactorily concluded, and she has been commissioned for service in the Northern Squadron, where she will relieve a sister-vessel, the "Javeline," which in her turn proceeds to Toulon to join the Mediterranean Fleet.

Toulon.—The first-class battle-ship "Gaulois" having had the repairs to her bow plates made good, which were damaged by her collision with the "Bouvet" some three months ago, was commissioned on the 15th ult., and she will relieve the "Charles Martel" in the Mediterranean Active Fleet, the latter ship being again transferred to the Reserve Division, some of her crew being transferred to the "Gaulois" to complete that ship's sea-going complement.

The first-class battle-ship "Marceau," having completed her refit in the dockyard, is about to commence her steam trials, as among other repairs she has received new boilers; after her trials are completed she will take the place of the "Magenta" as the torpedo-training ship. It is reported that the "Amiral Duperré" will take the place of the "Couronne" as gunnery training-ship, but as she requires new boilers, and no steps have as yet been taken towards fitting her up for her new duties, the change is not likely to take place for some little time yet.

The new armoured cruiser "Dupetit Thouars" is having her guns mounted. Complaints are being made at the slowness with which she is being completed; it is pointed out that the "Sully," a somewhat larger ship, which was commenced at the adjacent La Seyne Yard more than a year later, has already completed her trials, and is almost ready for commissioning.

The new destroyer "Pertuisane" has been attached as *Divisionnaire* of the First Division of the *Défense Mobile* at this port from the 22nd ult. The First Division comprises the torpilleurs de haute-mer "Forban," "Cyclone," "Rafale," "Bourrasque," "Borée," and "Tramontaine," while the Second Division consists of six first-class torpedo-boats with a speed of from 24 to 25 knots.

The new destroyer "Pique" has left for Oran, where she will be attached to the *Défense Mobile*; in view of the importance of Oran from a strategical point of view, and its nearness to the Straits of Gibraltar, it is intended as soon as possible to station several of the new submarines at that port.

The Minister of Marine has again changed his mind, and no further attempts are to be made to re-float the "Espignole," and orders have now been given to strike her name off the list of ships. The Minister has also called for tenders for the construction of 21 torpedo-boats, the contracts being given out in seven groups of three; these torpedo-boats belong to this year's programme, the 13 ordered in the early part of the year having formed part of last year's programme. All the boats will have a displacement of 97 tons, with engines developing 2,000-I.H.P., giving a speed of 26 knots.—*Le Yacht, Le Temps, and Le Petit Var.*

RUSSIA.—The New First-class Battle-ship "Tsarevitch."—The new first-class battle-ship "Tsarevitch," the second battle-ship of the so-called Russian building programme of 1898 to be completed, after a series of very successful trials, left Toulon on the 7th September for the Piræus, preparatory to leaving to reinforce the already large Russian fleet in China; at the Piræus she was to be joined by the new first-class armoured cruiser "Bayan," and the first-class cruiser "Aurora." Rear-Admiral Wirenius, who is to command the Division, hoisted his flag on board the "Tsarevitch" at Toulon on the 31st August. The "Tsarevitch," which is one of six sister-vessels, is unquestionably a very formidable ship; her

armament is identical with the ships of the English "Duncan," "London," "Canopus," and "Majestic" classes, but on a somewhat smaller displacement than any of those ships except the six of the "Canopus" class, while there seems to be no doubt that certainly in some respects her armour protection is far superior to some of those vessels. At her full-speed trial trip she averaged 19 knots, or more than a knot above the contract speed; but while this is the speed of the "Duncan" class, the armour belt of the "Tsarevitch" is 9 inches thick, as against the 7-inch belt of the English ships. The weight of armour in the "Tsarevitch" amounts to 4,000 tons, or 30 per cent. of her displacement of 13,170 tons, and this does not include the 4-inch inner longitudinal bulkheads, which would most materially limit the damage from the explosion of a torpedo against her side under water. Fuller details of the armament and armour of the "Tsarevitch" and her five sisters will be found further on in the details given of the "Slava." The "Tsarevitch" was designed by M. Lagane, the well-known head of the La Seyne Establishment, near Toulon, where the ship was built and completed; she was laid down in May, 1899, and launched in February, 1901. According to the latest information, the "Tsarevitch" and "Bayan" have left the Piræus for the Far East, without waiting for the "Aurora," which only left Cronstadt on the 8th inst.

Launches.—On the 29th August there was launched at the Baltic Ship-building Yard the "Slava," the last of the five first-class battle-ships of the 1898 programme building in the Russian Baltic Yards, to take the water. Her dimensions are as follows:—Length between perpendiculars, 367 feet 5 inches; length over all, including ram, 398 feet 1 inch; extreme beam, with sheathing, 76 feet; draught, on an even keel, 26 feet; displacement, 13,516 tons; I.H.P. of engines, 15,800; speed, 18 knots; total coal capacity, 1,250 tons. The first part of the keel was laid on 2nd November of last year. The vessel will mount four 12-inch, twelve 6-inch Q.F., twenty 12-pounders, twenty 3-pounders, and eight 1-pounder guns, in all 64; the 12-inch guns are mounted in pairs in turrets, one forward and one aft; protected by 11-inch armour, with 10-inch ammunition hoists; the 6-inch guns are mounted in pairs in turrets, protected by 6-inch armour, with 5-inch hoists, the three turrets each side being on the bow, beam, and quarter. Protection is afforded by a 9-inch water-line belt, tapering to 4 inches at bow and stern; this belt extends from 1 foot 6 inches above the water to 5 feet below. Above this belt is a second 6 inches thick, and 5 feet high, which, however, does not protect the main deck. There are two armoured decks, the lower, 3 inches thick on the flat, curves down each side to the double bottom at the turn of the bilge, the thickness being increased to 4 inches on the curve and sides, as a protection against torpedoes, this steel wall extends from the bow to just abaft the after magazines. This longitudinal armoured bulkhead is one of the most notable features in the "Slava" and her four sisters, and is also found in the "Tsarevitch," another of the class built at the La Seyne Yard, Toulon. The upper armour deck is 2 inches thick. The torpedo equipment will consist of 1 above-water and 4 under-water ejecting tubes. The armour is mostly of native production. There are in all some 167 water-tight compartments. The total weight of steel and armour employed is some 108,000 cwt. The triple-expansion four-cylinder engines were constructed on the same designs as those of the "Imperator" above-mentioned, the "Oriol" and "Kniaz Suvaroff," and are estimated to develop 15,800-H.P. They and the Belleville boilers are being constructed by the Baltic Works. The latter are twenty in number, this being the

eleventh ship whose boilers have been built at the yard, and are placed in two compartments, forming four stokeholds.

Of the other six ships of the 1898 programme, the "Retvisan," built at Cramp's Yard, Philadelphia, was completed last year; the "Tsarevitch," as we state elsewhere, was completed last August; the "Imperator Alexander III.," building at the Baltic Works, St. Petersburg, which was laid down in September, 1899, and launched in August, 1901, is approaching completion; the "Orel," laid down at Galernii Island, St. Petersburg, in June, 1900, was launched in August of last year, and the "Borodino," laid down in May, 1900, at the New Admiralty Yard, St. Petersburg, was launched in September, 1901; both of these ships will, it is expected, be completed next spring; while the "Kniaz Suvaroff," also building at the Baltic Works, which was laid down in September, 1901, launched in September, last year, will hardly be completed before the end of 1904.

On the 26th August took place, in the presence of the Emperor, the launch, first at the Neva Yard, of the third-class cruiser "Jemchug," of 3,016 tons, and at the New Government Yard, of the first-class cruiser "Oleg," of 6,675 tons. The principal dimensions of the "Oleg" are as follows:—Extreme length, with ram, 439.5 feet; extreme beam, with sheathing, 54 feet 5 inches; draught on even keel, 20 feet 7 inches; displacement, with full stores and coal, 6,675 tons; speed, 23 knots. She was laid down on the 18th July of last year. The boilers are of the Normand-Sigaudy water-tube pattern, 16 in number, and the triple-expansion engines are being supplied by the Franco-Russian Works. They are to develop a total of 19,500-I.H.P. The armament will consist of twelve 6-inch 45-calibre Q.F. guns, two of which are mounted in a turret forward, and two in a turret aft, on twin mountings, four in casemates on the upper deck, two guns firing forward and two right aft; the turrets are protected by 5-inch armour with 2-inch ammunition hoists, and the casemates by 4-inch armour; the remaining four 6-inch guns are on upper deck, protected only by shields; there are, in addition, twelve 12-pounder 50-calibre Q.F. guns, with twelve 3 and 1-pounder guns, and six torpedo-tubes, two of which are submerged. The armoured deck is 1.5 inches thick on the flat, and 2 inches on the slope, while there is also 2 inches armour round the combings of the funnels between decks; the conning tower is 6 inches thick.

With regard to the "Jemchug," her dimensions are as follows:—Extreme length, 365 feet; length between perpendiculars, 347.95 feet; extreme beam, with sheathing, 40 feet; draught on an even keel, 16 feet 4½ inches; displacement, with full stores and coal, 3,106 tons; estimated speed, 24 knots; total coal capacity, 650 tons, giving a radius of action of 5,000 miles at 10 knots, and 900 miles at full speed. The cruiser was laid down on the 13th June, 1902. In all, she has had 22,207 cwt. of steel built into her. She will mount fifteen guns, six of 4.7-inch 45-calibre Q.F. guns, with six 3-pounder, two 1-pounder, and two Maxims, with five above-water torpedo-tubes. She will have a 2-inch armoured deck; the combings of the engine hatches will also be protected by 2-inch armour, and there is a 3-inch conning tower. She has 17 water-tight compartments, and a double bottom. The armour has been supplied by the Ijora Government Works. The Neva Yard furnished the steel for the hull, and is making the triple expansion four-cylinder engines, which will drive three screws, and together they are calculated to develop 17,000-I.H.P. The boilers, sixteen in number, are of the Yarrow pattern, and turned out also by the Neva Works.

Side by side with the "Jemchug" is being constructed the "Izumrud," which it is proposed to launch about the middle of October.

The new Imperial yacht "Alexandra" was launched on the 29th August, from the Baltic Works, in presence of the Tsar. Her construction was carried out with great rapidity, the first plates having been laid early in July, and the vessel being ready to launch, with boilers and funnels complete, within 50 days; she has a displacement of 500 tons. The hull has water-tight bulkheads, dividing it into eight compartments transversally, and longitudinally into twenty-six. She will be fitted with turbines and condensers, and warmed by steam. Four Baronovski guns will be carried for saluting purposes. The fittings will be of wood of various kinds, those in the saloon being of light-coloured beech, with panels painted in oils depicting famous naval engagements, and views of the principal Russian ports. The Empress's cabin will be lined in light pear-wood, and that of the Dowager in light walnut. In the deck-house will be the Emperor's cabinet in beech and satin-wood. The paddle engines will be of the compound type, supplied by the Baltic Works. The four boilers of the Belleville pattern, with economisers, were placed on board before she was launched.

New Ships.—A commencement has been made with the two new battle-ships of the "Kniaz Potemkin" class, of 12,500 tons displacement, which are being built in the Black Sea at the Nicolaieff and Sevastopol yards; they are to be named the "Joann Zlatoust" and the "Evstafii" respectively. It is also proposed to lay down two more first-class cruisers of the "Kagul" type for the Black Sea fleet, one at Nicolaieff, and the other at Sebastopol.

Orders have been given for the laying down of two new first-class battle-ships of 16,600 tons, which are to be built at St. Petersburg. One to be called the "Imperator Pavél," is to be laid down at the Baltic Works, while the second, to be called the "Andrei Pervozvannui," is to be laid down at Galernii Island.

Two recently-built small turbine steamers have been added to the Port Arthur squadron, and are to be known as "Vodolei No. 1" and "Vodolei No. 2."

Steam Trials.—The following ships, on return from commission in foreign waters, were tested, with the subjoined results:—

First-class cruiser "Admiral Nakhimov"—84 revolutions of both engines, and 68 lbs. pressure of steam; average speed, $15\frac{1}{2}$ knots; the two engines developing a mean of 7,005-I.H.P.; draught during trial, forward 25 feet 9 inches, aft 27 feet 3 inches.

First-class cruiser "Herzog Edinburgski"—With 63 revolutions, and 50.5 lbs. pressure of steam, gave a speed of 11.75 knots; the engine developing 2,460-I.H.P. The cruiser, during its commission, made in all 7,500 miles under steam in 850 hours, or an average of $8\frac{1}{4}$ knots. Draught 18½ feet and 24 feet.

Second-class cruiser "Kreiser"—Draught, forward 14 feet 1 inch, aft 16 feet 2 inches; with 79 revolutions of the screw, and 60 lbs. steam, gave a speed of 11 knots, the engine giving an average of 1,006-I.H.P.

Military Officers and the Fleet.—The Ministry of Marine, some years ago, sanctioned the transfer to naval employment of officers of the Army, in the ratio of one to each Seamen's Division and Instructional Corps. This has now been decided to be insufficient, and a supplementary transfer of officers so attached has been sanctioned in the ratio of three to each

such unit. All those so transferred will come permanently under the Admiralty.

General.—The *Russkii Invalid* publishes some rather interesting considerations with regard to the defence of the Gulf of Finland. The author points out that a single coast-defence ship of 4,000 tons, costing some £400,000, could be replaced by eight or nine torpedo-boats of some 30 knots speed, or from sixteen to eighteen of a speed of from 25 to 27 knots. A battle-ship of 10,000 tons would have small chance against such a swarm, so that for the cost of one defence-ship of 4,000 tons a flotilla could be built more than a match for one of twice the dimensions. The successful attack made by the Japanese in Wei-hai-Wei harbour shows that such tactics have every chance of success. A boat need not now get nearer than 600 yards, and this distance will, before long, be increased. The writer puts the attacking force at an outside figure of 40 vessels. Allowing 10 against each, this would mean 400 boats, or, with a reserve, say 500, costing 10 millions, as against the 30 millions of their opponent. It appears that Peter the Great left instructions "How to beat line-of-battle ships with galleys." The torpedo-boat is the modern galley, only much more deadly. Some cruisers and scouts would be needed to supplement them. The only drawback is that the boats might frequently be unable to keep the sea.

The town of Pereyaslavl may be regarded as the cradle of the Russian Navy. On the lake there sailed the "granddam of the Fleet," the cutter of Peter; there he learned the elements of seamanship, and founded the first shipbuilding yard. An *ukase* of the 7th February, 1722, cut on the granite memorial, "Decree to the notables of Pereyaslavl. It is your duty to preserve the remains of ships, yachts, and galleys, which, if you neglect, it shall be visited on you and your descendants, for disregarding this decree.—PETER." In another *ukase* he ordered that every year, on the Sixth Sunday after Easter, the founding of the Russian Navy should be commemorated. So every year there is a procession of boats on the lake, with Peter's cutter at the head of it.

By order of the Naval General Staff, some experiments have been made at Sevastopol with balloons, the reports on which were so favourable that it has been determined, like the French, to organise a Naval Balloon Corps with three parks, stationed at Sevastopol, Port Arthur, and Cronstadt respectively. For the present, these will be applied principally to the defence of the ports in question; but plans are being worked out for applying the system to squadrons in home and foreign waters. Lieutenant Bolshev, who is in charge, was sent to France for four months to study the methods there employed.

It is reported that a new Northern Channel, deeper than the Southern, has been discovered and marked out in the Amour Estuary, and which allows of ships of 13 feet draught entering the Amour. With a small amount of dredging, it would become available for vessels of as much as 18 feet draught.

A somewhat doubtful trophy has been placed near the Odessa Government Buildings in the shape of a mortar, recovered from the wreck of the "Tiger," which is described as "having surrendered." Later in the war, it was mounted, with other pieces so recovered, on the Central Battery. It is described as weighing some 80 cwt., with an 84-lb. shell. An inscription is attached, recounting the troops that took part in the "action," and the prisoners taken, the wounded captain of the "Tiger," 24 officers, and 201 men, five being wounded!

LATEST STATIONS OF SHIPS.

Vladivostok.

- First-class battle-ships—"Petrovsk," "Poltava," "Sevastopol,"
 "Peresviet," "Retvisan," "Pobieda."
 First-class armoured cruisers—"Rossia," "Gromoboi," "Rurik."
 First-class cruisers—"Askold," "Bogatyr."
 Third-class cruiser—"Novik."

Port Arthur.

- First-class cruisers—"Pallada," "Diana," "Variag."
 Third-class cruisers—"Boyarin," "Djigit."
 First-class armoured gun-vessel—"Gremiashchi."
 First-class gun-boat—"Giliak."
 Transports—"Amur," "Yenissei."
 Third-class torpedo-cruisers—"Vsadnik," "Haidamak."
 Torpedo-boats—"Bezshumny," "Bezposhadny," "Bditelny," "Bezstrashny," "Boëvoi," "Vnimatelny," "Vnushitelny," "Vynoslivy,"
 "Vlastny," "Grozovoi," "Burny," "Boiki."

In the Gulf of Kwantung.

- Third-class cruiser—"Zabiaka."
 Gun-vessel—"Sivuch."

Niuchwang.

- Gun-vessel—"Bobr."

Shanghai—

- First-class armoured gun-vessel—"Otvajny."

Chemulpo.

- Gun-vessel—"Koreëts."

Coast of Kamchatka.

- Gun-vessel—"Mandjur."

MEDITERRANEAN.

Phalerum.

- Second-class battle-ship—"Imperator Nicolai I."
 First-class armoured gun-vessel—"Khrabry."

Piræus.

- Gun-vessel—"Kubanets."

In Archipelago.

- Training-ship—"Okean."

*Returning from Mediterranean.**Vigo.*

- Torpedo-boats 119 and 120.

EN ROUTE TO PACIFIC.

- Battle-ships—"Osliabia," "Tsarevitch."
 First-class armoured cruiser—"Bayan."
 Training-ship—"Okean."
 Torpedo-boats—212, 213, 221, and 222.

—Kronstädtski Viéstnik.

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS FOR SEPTEMBER, 1903.

Major-General J. R. Slade, C.B., to be Major-General on the Staff to command the Troops in Egypt. Lieut.-Colonel and Brevet Colonel C. E. Bradley, from h.p., to be A.Q.M.G., 9th Division, IIIrd Army Corps, with the substantive rank of Colonel in the Army. Lieut.-Colonel F. Hammersley, from the Lancashire Fusiliers, to be A.A.G., IIIrd Army Corps, and to have the substantive rank of Colonel in the Army.

The King has been pleased to appoint his Imperial Majesty Francis Joseph I., Emperor of Austria and King of Hungary, K.G., Colonel in Chief 1st (King's) Dragoon Guards, to be a Field-Marshal in the Army.

Colonel A. E. Codrington, from A.A.G., IIIrd Army Corps, to command the Coldstream Guards and Regimental District. Major-General (temp. Lieut.-General) Sir A. Gaselee, G.C.I.E., K.C.B., I.A., to be a Lieut.-General on the Staff in India, with the rank of Lieut.-General in the Army. Major-General H. L. Smith-Dorrien, D.S.O., from A.G. in India, to command a First-Class District in India, with the rank of Major-General in the Army. Colonel (temp. Major-General) B. Duff, C.B., C.I.E., from a Second Class District Commander, to be A.G. in India, with the rank of Major-General in the Army. Lieut.-Colonel and Brevet Colonel J. R. P. Gordon, C.B., from h.p., to be an A.A.G., with the substantive rank of Colonel in the Army. Colonel L. R. H. D. Campbell, C.B., on relinquishing the local rank of Major-General with the China Expeditionary Force, and the command of a Second Class District in India, is granted the hon. rank of Major-General. Major-General W. J. Stuart to be Colonel Commandant Royal Engineers. Colonel C. H. Kelly, from h.p., to command the 34th Regimental District (the Border Regiment). Colonel C. R. Townley, from the 34th Regimental District (the Border Regiment), to command the 12th Regimental District (the Suffolk Regiment). Colonel R. E. Allen, C.B., is granted the hon. rank of Major-General on retirement. Surgeon-Colonel J. Richardson, retired I.M.S., to be Hon. Physician to His Majesty. Brevet Colonel G. F. Browne, D.S.O., is granted the substantive rank of Colonel in the Army, on appointment as an A.A.G. at Head Quarters.

FRANCE.—*Army Manœuvres, 1903.*—The French Army manœuvres commenced with the cavalry manœuvres between the towns of Rethel and Vouziers, Ardennes, on 3rd and 4th September; and were followed by the manœuvres of the XIIth and XIIIth Army Corps in the Department of Creuse, under the general direction of General Négrier, from 10th to 16th September; and by the manœuvres of the XIVth and XVth Army Corps between the same dates in the valley of the Rhône, south of Valence, to which foreign officers were invited. The general instructions to the

cavalry with regard to their manœuvres were that they were to advance, when at a distance of 1,650 yards, in extended order, either of line or of column, taking every advantage of cover, under which they were to reform, if possible, before charging. They were to leave cover at a gallop, and on no account were to expose themselves to artillery or infantry fire when standing still, advancing at a walk, or even at a trot. On 3rd September, the 4th and 5th Divisions of cavalry were to cut off the 84th Brigade of infantry marching on Rethel, the infantry being accompanied by the 2nd and 6th Brigade of cavalry and a cyclist company. The latter, acting as scouts, quickly came into touch with the two cavalry divisions, three sections being charged by a squadron of cavalry. The cyclists dismounted and maintained a steady fire; some men of the supporting squadrons, however, crept up on foot behind them and compelled them to surrender; the cyclists resisted the men who charged, by striking at the horses with their carbines, until stopped by their officers. The two divisions of cavalry, however, were unable to check the march of the infantry, though they repeatedly charged them, the fire of the infantry being considered by the umpires too strong for them. On 4th September, a defence of the railway line by the 5th against an attack of the 4th Division took place. Each Division had horse artillery, and both sides opened fire simultaneously. The attacking party was eventually declared to have attained its object. The new instructions did not deter the cavalry from charging in the old-fashioned way, with a total disregard of the destructive effect of modern fire.

The manœuvres of the XIIth and XIIIth Army Corps between Clermont and Limoges were intended to illustrate the particular tactics advocated by General Négrier before the Council of War; but whether they succeeded in doing so or not is a matter for conjecture. On 10th September the two army corps advanced against each other. They met on 12th September, when the XIIIth Army Corps attacked and drove back the XIIth. The 13th September was a day of rest; and from the 14th to 16th September the combined army corps, consisting of 50,000 men, marched on Limoges, which was supposed to be defended by a hostile force. The troops had been assembled by train by the 6th September, and had gone through some brigade and division manœuvres from the 6th to the 8th, the 9th being given up to rest. The XIVth and XVth Army Corps had also assembled by 6th September, and on that and the two following days they had engaged in divisional manœuvres. The 9th September was a day of rest. On 10th September, the two army corps were confronting one another in the valley of the Rhône above and below Bollène, the troops of each corps being on both sides of the river. General Mathis, in command of the Southern Army (the XVth Army Corps), intending to advance on Bollène on the right bank, and wishing to throw a bridge across the river in order to unite his forces, commenced operations by a feint in force on the left bank, at the same time advancing his troops on the right bank, but so as not to appear to threaten Bollène. General Grasset advanced in three columns, and a general engagement took place, General Mathis's troops on the left bank withdrawing to a strongly intrenched position. During the engagement, engineers to the number of 200 came up the river from Avignon on pontoons towed by a tug, and commenced building a bridge in Mathis's rear at 2 p.m. The bridge was 230 yards long, and was composed of 28 boats. The strength of the current was about 7½ miles an hour. The bridge was completed by 6 p.m., and General Mathis, while still holding the strong position on the left,

withdrew a considerable body of his troops to the right bank in the evening, preparatory to the advance on Bollène on the following day. Mathis had a superiority in cavalry, and Grasset, fearing that his transport would be interfered with, employed the greater portion of the following day in securing its safety. Mathis advanced on Bollène; and one of his infantry regiments, the 3rd, fixed bayonets and prepared to charge across the river Lez, which was between them and Bollène. The charge was delivered in some confusion, and the umpires decided that the infantry were not in sufficient force to carry the position, and ordered them to retire. Reinforcements, however, soon arrived, and Bollène was carried at the point of the bayonet. Grasset withdrew to a strong position among the hills, where the enemy's superiority in cavalry could not be used advantageously against him; he was able to hold this position the following day, despite of all Mathis's attempts to dislodge him.—*Précis from La France Militaire.*

Lessons of the Manœuvres—Cavalry on the Battle-field.—The manœuvres of this year have brought into prominence the more than ever great question of the present day, viz., the employment of cavalry on the field of battle. On this subject it is well known that opinions are far from being unanimous, and that theories, more or less specious, conduce to the upsetting of the present organisation, under the pretext of throwing more light on the subject. It is therefore not surprising that military critics, who followed the manœuvres, have given an important place in their accounts to questions regarding the cavalry. For ourselves, convinced that the employment of so important an arm cannot be condensed into a mere formula or aphorism, we are of opinion that the discussion may be indefinitely prolonged without arriving at any definite conclusion, so long as the problem is presented in the following categorical terms, viz.:—“Should cavalry be employed in masses or in small groups on the battle-field?” It is because the problem is always thus presented that the real question is obscured, so that the true solution, and the only logical and rational one, is lost sight of: the distribution, the grouping of cavalry must be regulated by the tactical situation, and by the use which could or which should be made of that arm on a particular occasion.

As a matter of fact the theory that consists in concentrating all the available cavalry at a particular point, with a view to action by masses alone, is exposed to the danger of rendering the whole of the cavalry impotent for action at the desired point, if the mass has not the necessary time to arrive there at the proper moment. The other theory, which consists in suppressing all massing, but would have scattered, isolated squadrons in ambush, ready to fall on the first prey that comes their way, may indeed give partial success, but can never have any decisive result. It is therefore reasonable to say that detachments of cavalry may be usefully employed in battle during that period of the action generally termed “*lutte d'usure*.” This, however, does not exclude massed action at all times, when a decisive effort should be attempted. This massed action should, in consequence, be taught at manœuvres in peace-time. On the battle-field preparation should be made for it by the junction of several larger bodies of cavalry not employed in the “*lutte d'usure*.”

The following lines, borrowed from General von Pelet-Narbonne, appear to define very precisely the logical employment of cavalry on the battle-field:—“It should first be observed that attacks by small bodies of cavalry, because they are often possible of easy execution, and are

more calculated to surprise the enemy, may also have their portion of success. But in the decisive battle that cavalry alone is in a position to produce an effect which advances in several echeloned lines, combining a frontal with a flank attack. This necessitates a suitable force, and for this object the efforts of a cavalry commander, when he wishes to attempt a decisive enterprise, should be to concentrate the greatest possible number of squadrons that the ground will permit of. Numbers are necessary for two reasons. In the first place, a simultaneous attack should be made on all the hostile bodies in position to fire on the ground of attack; in the second place, endeavours should be made to scatter the fire of those bodies by assaulting in echeloned units advancing from different directions, and so disposed that the fire meant for one of those units could not reach the one following. In order to comply with these conditions, it is necessary to act with large effectives, in short with masses, or else to abandon the immense results which these decisive attacks might yield. Massed action, however, does not mean assembling troops of cavalry, in compact formations, at the same point; its meaning, rather, is to judiciously select an objective, and to hurl against it the desired number of squadrons, each formed in one rank, and to so distribute these squadrons as to simultaneously attack all hostile bodies capable of bringing fire to bear. A massed attack by cavalry may, without doubt, be more or less favoured by circumstances; it will, as a rule, have more chance of success on the flanks than anywhere else. It will succeed the more if it has the benefit of effecting a surprise, which explains the idea of acting in close or undulating country, and not on one like a billiard table."

Since General von Pelet-Narbonne wrote the above lines, however, the progress made by artillery has given a fresh incentive for massed cavalry attacks. These attacks will succeed to-day more easily than they did in the past, prepared for, as they will be, by the concentrated fire of numerous batteries; thanks to their rapidity of fire, they may even open the door to a decisive infantry attack. Finally, it may be said that neither action by small bodies nor massed action should be exclusively adopted and applied to all situations. It is idle to dispute over the intrinsic merits of one or the other form of action. The whole question resolves itself into which form of action is most suitable to the tactical situation.—*La France Militaire*.

Recruiting Statistics for 1902.—The number of youths of the 1901 class inscribed on the rolls in January, 1902, amounted to 325,013; an increase of 15,681 on the number for the preceding year. By adding those put back in 1900, viz., 44,437, and in 1899, viz., 23,395, the total recruiting resources amounted to 392,845 men, who were distributed as follows:—

	Men.
Exempt as unfit for service, etc.	25,854
Not allowed to serve (bad characters, etc.) ...	92
Put back	63,794
Living abroad (out of Europe)	695
Naturalised, and exempt on account of age ...	1,252
Enrolled in the Auxiliary Services	27,971
Serving as Volunteers { in the Army (a)	26,109
{ in the Navy (b)	5,384
Enrolled for 1, 2 or 3 years	241,694
Total	392,845

3,000 men of the contingent enrolled for 1, 2 or 3 years were posted to the Colonial troops. The contingent of the Home Army was thus reduced to 238,694 men. During the year, the number of youths who enlisted before reaching the age for military service amounted to 19,839 in the Home, and to 4,673 in the Colonial Army. By adding them to the figures (a) and (b), the total number obtained for the 1902 contingent amounts to 292,315 men, of whom 284,642 were drafted into the Home Army. In order to be absolutely correct, 8,474 men, who failed to appear, should be deducted, who were posted as though present, but who for the most part never joined. The 241,694 men called to the Colours, and the 24,512 who enlisted before reaching the age for military service, were distributed in the following proportions, viz.:—

Home Army.

	Called out for 1 year.	Called out for 2 and 3 years.	Called out for 3, 4, and 5 years.
Infantry... ..	65,075	106,934	12,444
Cavalry	113	22,145	2,849
Artillery	9,900	20,794	3,833
Engineers	1,620	4,490	713
Transport	1,115	2,080	—
Administration Troops, etc. ...	1,720	2,708	—
Total	79,543	159,151	19,839

Colonial Troops.

Infantry... ..	680	1,652	3,549
Artillery... ..	63	605	1,124
Total	743	2,257	4,673

The contingent for the Home Army shows an increase of 24,596 men on that of the 1900 class.

Under the heading of instruction, the 325,013 recruits are classified as follows :—

Neither read nor write	13,696 or 4·21 per cent.
Able to read only	3,910 or 1·20 „
Able to read and write	33,075 or 10·18 „
Having a higher primary education	249,969 or 76·91 „
Having obtained a certificate of primary education	5,264 or 1·62 „
With degrees	6,770 or 2·08 „
State of education unknown	12,329 or 3·80 „

The calling to the Colours of the men of the 1901 class took place on the 14th, 15th, and 16th November, 1902.—*Bulletin de la Presse et de la Bibliographie Militaires.*

GERMANY.—*Army Manœuvres, 1903.*—The four Army Corps engaged were the IVth and XIth (Prussian) and the XIIth and XIXth (Saxon), making altogether 96 battalions of infantry, 26 squadrons of cavalry, 16 regiments of field artillery, 4 battalions of pioneers, and 4 battalions of the Army Service Corps. There were also 2 divisions of cavalry, consisting of 15 regiments, 4 horse batteries, 3 groups of

machine guns, and some detachments of pioneers. The men from two training schools for non-commissioned officers attended the manœuvres, the commissariat columns first introduced last year were again employed, and there were, in addition, some balloon sections and telegraphists.

Though the advance over open ground was still made in extended order, there was a marked tendency in the infantry tactics to abandon the methods introduced in previous years as a result of the experiences in the South African war. Before the grand charge led by the Emperor, the cavalry galloped for six miles in order to gain a position from which to take the enemy by surprise; this object, however, was scarcely attained, as clouds of dust revealed their presence long before they reached the desired position from which the charge was eventually delivered. There were eight batteries of the improved gun employed, in which the French method of treating the recoil is followed, and a protective shield carried. These guns gave every satisfaction, and they are believed to be even superior to the French gun as being of less weight. As to whether a German battery of these guns shall consist of four guns or six was left still undecided by the manœuvres. A German officer's criticism of the manœuvres was to the effect that, owing to reasons of convenience and economy, ground was selected for the manœuvres, whereas the latter should have to be adapted to ground of any kind. The connection between the various infantry units was not well maintained, and this gave rise to unimportant and meaningless engagements, which in real war would have resulted in units being defeated in detail as they entered into action, just as happened at Gravelotte. The cavalry was not effectively employed in the work of reconnaissance, owing to many having been surprised. Some scouting parties, too, in excessive zeal, advanced to positions where in real war they would have been annihilated by infantry fire. Infantry, and even artillery, allowed attacking bodies to approach too close before opening fire. The new method, too, of giving notice to cease fire was confusing, and a return to the old method should be made as quickly as possible. This latter may have been due to the fact that the high wind seriously interfered with balloon operations. The weather conditions, too, were unfavourable to wireless telegraphy.—*Précis from La France Militaire.*

Cavalry Subsistence Supply Convoys.—In Germany, as in France and Belgium, cavalry divisions have, as a rule, no subsistence supply convoys, and are expected, for the most part, to live on the country. General von Bernhardt, in his book "*Unsere Kavallerie im nächsten Kriege*" is quite opposed to these convoys, as being conducive to impede the rapid movement of cavalry. This branch of the Service, he considers, requires convoys carrying from five to six days' supply of oats, and which should, in addition, be exceedingly mobile, and sufficiently well horsed to be able to move as quickly as the cavalry itself. It is by mobility alone that these convoys would be able to secure relative and at the same time indispensable safety, for the rapidity with which cavalry when scouting leaves one zone of operations for another would be adversely influenced by the necessity for covering its convoys, and even further by being compelled to furnish a considerable escort for them. The latter, instead of being from the squadrons, should be formed by means of reservists, armed with the carbine, some placed on the seats and others mounted on requisitioned horses, and organised, in short, more as mounted infantry, their horses being for them merely a means for transport,

allowing them to accompany the wagons at a rapid pace; under these conditions requisitioned horses would be available, provided they were not required for service in the squadron.

In his anxiety to increase cavalry mobility, and to make it independent as regards food supply, General von Bernhardt extols the use of pressed forage, which suffices for a day or two, to keep the horse up to its work, and at the same time weighs little, and is of small compass. These rations, he considers, might be profitably employed when extreme mobility is necessary, and would render the greatest service with patrols, officers' reconnaissances, etc. In the same way, General von Bernhardt would like to see cavalry divisions have their own ammunition sections, and the men themselves to carry more cartridges than they do at present, on account of the present importance of dismounted action.—*Belgique Militaire*.

ITALY.—*Grand Manœuvres, 1903*.—As a general rule, during these manœuvres, great endurance and good humour were displayed by the troops. Although the heat was very great during the first week in September, their moral as well as their sanitary condition was on the whole most satisfactory. The various services were well carried out. Special experiments were made with regard to means of communication; optical signals, wireless telegraphy, captive balloons, etc. Each cavalry brigade was provided with a wireless telegraphy installation. For the first time in Italy, trials were carried out with automobiles placed at the disposal of the staff. These were much appreciated, and, after experience, it was recognised that it was no longer possible to do without them. By their means, both the direction of the manœuvres and corps commanders were able at all times to obtain an exact and complete view of the situation. In a comparatively short time the corps commander is himself able to traverse the long fighting fronts, and to ascertain at first hand many circumstances, which without their assistance he would necessarily remain ignorant of.

As regards heavy transport, experiments were limited to a steam automobile capable of moving at a rate of 8 kilometres an hour on a good level road, whilst towing seven or eight large vans. On less well kept roads than those followed, it is clear that it could not have rendered such good service. The working of the automobiles was entrusted to men of the Engineers. It is probable that a section of automobilists will shortly be formed. The railways were called upon to perform a heavy task. The lines in Venetia are not numerous, and they had to provide for the transport of 60,000 men, 6,000 horses, and 1,000 wagons. Two days were required for the operation, and 100 special trains were called into requisition. Nevertheless, everything went off normally, with the exception of a bad accident at Beano, due to the negligence of a guard and a station-master.

The service of supplies was carried out with regularity. Here and there the punctuality of certain providers was not all it should have been; but in war-time this would probably not occur, as the regulations lay down heavy penalties for war, which cannot be enforced in peace-time. In the same way, occasions may be noted where the cavalry and other very mobile corps were not followed sufficiently closely by their transport. More rapid modes of transport should be found for the latter. The reservists deserve special mention. They bore all fatigue and hardship with the greatest cheerfulness, and their sanitary condition was good.—*Précis from Revue Militaire Suisse*.

NETHERLANDS.—*Organisation of the Landwehr.*—The Landwehr, which replaced the *Schutterij* by the law of the 24th June, 1901, received its first contingent on the 1st August last. As this institution must have a distinct organisation from that of the Army, a Royal decree of the 29th May last divides the country into 48 "Landwehr Districts."

Each of these districts is placed under the command of a field officer, who, on mobilisation, is meant to assume the command of the Landwehr, infantry battalion to be organised in the district. As, however, these 48 battalions cannot be formed before 1909, by which time the new law will have come into full effect, the above-mentioned Royal decree lays down that the districts will be, provisionally, combined into twelve groups, which will be commanded by six district commanders, to be selected during the course of this year, and six provincial lieut.-colonels or majors.

The organisation of the Netherlands Army includes ten provincial lieut.-colonels or majors. Their suppression has, at various times, been demanded by Parliament, but the War Minister was opposed to this step, and pointed out the importance of the duties entrusted to them, especially as regards recruiting, and their utility for the command of Landwehr troops.

According to the preamble to the scheme, which the Government are about to lay before the States General, with a view to asking for the credits necessary for carrying out the law, the 1895 contingent, consisting of 7,045 men, will be provisionally grouped into six infantry battalions of four companies each, and into eight fortress artillery companies. The staff of each district will, in addition to the commander, consist of an adjutant and a sergeant-major. The cadre of each of the 32 companies of infantry and fortress artillery will consist of a captain, a lieutenant or sub-lieutenant, and a colour-sergeant. The men belonging to the fortress artillery, the engineers, and the companies of orderlies, will be assembled into eight detachments, each under the command of a lieutenant or sub-lieutenant.—*Bulletin de la Presse et de la Bibliographie Militaires.*

RUSSIA.—*Army Manœuvres, 1903.*—The *Peterburgskiya Viedomosti* publishes in three recent numbers some particulars of the grand manœuvres of the Russian Army. The general scheme of the manœuvres was that an Army, known as the Southern Army, was marching from Riga on St. Petersburg, and that it was the duty of a Northern Army to intercept it. The Northern Army, under command of General Baron Meyendorf, consisted of the Guards Corps and the XVIIIth Army Corps, making a total of 62 battalions, 36 squadrons, and 132 guns; the Southern Army, under command of the cavalry General Kakhanoff, consisted of the 1st and XXth Army Corps, making a total of 66½ battalions, 28 squadrons, and 154 guns. Precise dates are not given, but apparently on 15th August Meyendorf, who had intended to seize Pskov with his XVIIIth Army Corps, heard that his opponent was pushing forward his cavalry to prevent this. Having confirmed this movement of the enemy's cavalry, by reconnoitring, he gave orders to his own cavalry to advance in force. Pskov is almost midway on the direct railway line between Riga and St. Petersburg; it is situated on the lake of the same name, which lies to the north of it, at the point where the river Velikaya, running almost due north, empties itself into the lake. The Northern cavalry in their advance reached a village where they camped as though for the night, but in the depth of the night they broke up their camp and continued their march,

moving forward as quietly as possible in three columns at a gentle trot. The moon appeared only occasionally from behind the clouds, and it was necessary to employ local peasant guides in order not to miss the way. At 2 o'clock in the morning the first column entered Pskov by the bridge, and were so far unexpected that the Smolenski dragoons, who were in possession of the town, had not time to get into their uniforms to oppose them. (These dragoons had made a forced march on Pskov. Riding from 5 a.m. on 14th August until 10.30 a.m. on 15th August, they had covered over 66 miles. They had entered Pskov the same evening.) The second column also entered the town by the permanent bridge, while the third column threw a pontoon bridge across the river and entered by that means. The umpires admitted the occupation of the town by the Northern Army, and Cossack guards were placed at all the entrances to it, while the remainder of the men turned in to finish their night's rest. The 16th August was a day of repose for both Armies. The Tsar arrived in Pskov on 17th August, and had the position of the contending Armies explained to him. On the same day the Southern cavalry, which had crossed the Velikaya, recrossed the river at daybreak in support of the 1st Army Corps, taking up a position on its right flank. Part of the XVIIIth Army Corps of the Northern Army, in moving on Pskov from the east, when about to cross a small river, came under the fire of the 1st Army Corps, and an engagement ensued, the result of which was undecided owing to the troops of both sides becoming mixed up. On 20th August the opposing Armies took up positions facing one another, the Northern Army on the right bank and the Southern Army on the left bank of the Velikaya. At 9 p.m. the cavalry of the latter Army, consisting of 24 squadrons and 18 guns, advanced and were met by ten squadrons of the former Army, but by the umpire's decision both sides were put out of action for the space of an hour. The Southern horse made the best of this time, and at the end of it, while the attention of the Northern horse was still directed to the infantry battle which was going on, they suddenly charged, and succeeded in capturing the 18 guns of the Northern cavalry, only two regiments of the latter being there to defend them, the other regiments not being able to come up in time. The umpire ordered the captured guns out of action, and also ordered the two defeated regiments to retire two miles in the direction of Pskov. At the close of the day the Southern Army had turned the position of the Northern Army with the object of driving it to the north-west of Pskov, but it was still between it and that town. On 22nd August the Northern Army strengthened itself in its position preparatory to the final scene on the 23rd. On that day the Southern Army made the expected general attack, and when this was at its full, and the whole scene of the operations covered with a veil of smoke, the Tsar gave the order to cease fire. At the concluding review the troops formed an enormous square with their faces turned towards the Tsar's pavilion, which was in the centre.—*The Times*.

SWITZERLAND.—*Army Manœuvres, 1908*.—The 1st Army Corps, which has just been through the manœuvres, is entirely composed of the *élite*, or, as we would term them, Regulars, that is to say, men of from 20 to 32 years of age, with subaltern officers of from 22 to 38. These men had put in 45, 55, and 90 days' regular service as recruits, and the officers commanding them had put in, before reaching the rank of lieutenant, 155, 197, and 170 days' regular service, according as they served in the infantry, the artillery, or the cavalry. There can consequently be no

question of comparing these troops with those of Powers possessing permanent Armies; they must rather be compared with reserve troops who, having lost sight of all military instruction during several years of civil life, come back to the colours to manœuvre under non-professional officers.

The Cavalry.—The recruiting of the men is carried out with discrimination, that is to say, that men for the cavalry and field artillery are taken from agriculturists, carters, and coachmen, who, as a rule, bring their own horses, which they know well, and know how to look after them, and can ride. Officers of the cavalry are almost all wealthy, possess valuable horses, and as a rule ride well. They are too apt to attempt brilliant but impossible charges on the battle-field, and devote but little attention to scouting and patrolling. The Maxim machine guns formed a mounted company with four guns, and were attached to a cavalry regiment. These guns, with their carriages and ammunition boxes, were drawn by strong horses, were rapidly brought into action, and fire the infantry cartridges at an average rate of 400 shots a minute.

Infantry.—Is a little heavy. This is the cause of a certain lack of smartness in the men, who, at the same time, are not overloaded. The pace is slow; there are no bugles, and the troops march to the drum. On the manœuvre ground, a certain hesitation, a certain wavering in the ranks was observable, due to the dearth of properly trained non-commissioned officers to look after the half sections.

Artillery.—The horses for the artillery belong in part to the Government, the remainder being provided by contractors, at a charge of 5 francs a day, for the manœuvres. All the animals were in good condition, and bore the necessary fatigue very well. One point is of interest with regard to the cavalry horses, viz., with the exception of a few officers' chargers, all will go in harness; they are thus able on occasion to render enormous services to the artillery and to the transport.

Both the administration and the medical services were well organised. By the former, rations for 34,000 men were frequently issued in an hour and a half without noise, interruption, or mistakes. Everyone was in his place and always knew exactly what he had to do. By the former, the wounded and sick were tended with an attention, a gentleness, and a cheerfulness as is seldom met with amongst the military surgeons of permanent armies. The feeding of the men was good, no wine or alcohol was allowed, but the soldier got 8d. a day in the infantry, and 1 franc in the cavalry and artillery. In cantonments, even more than during the manœuvres, the indifferent quality of, or the entire absence of, non-commissioned officers was most noticeable. Lieutenants were frequently obliged, in consequence, to undertake the duties of corporals and lance-corporals. On the other hand, the men worked without method and lost time, frequently having to do their work over again; the intervention of officers in small matters of detail irritates the men, blunts their initiative instead of developing it, and lessens the authority of the officers.—*Précis from La France Militaire.*

New Artillery Armament.—The *Revue Militaire Suisse* announced in May last that the question of the introduction of a gun recoiling on its carriage and with shields was nearing its solution. The Federal Council having received the Report of the Commission on Artillery Re-armament, which has been sitting for some years, have

already addressed a message to the Federal Assembly, advising the adoption of the new *matériel*. The question is now definitely settled by a decree of the 23rd June last, the general tenour of which is given by the *Schweizerische Zeitschrift für Artillerie und Genie* of the month of August, according to which the *matériel* proposed by the Commission, barrels, gun-carriages, caissons, wagons, and ammunition, is definitely adopted for the armament of field artillery batteries, under the classification "*Field Artillery Matériel*, 1903."

Full powers are given to the Federal Council to take measures regarding the acquisition and manufacture of *matériel* and ammunition. For this purpose, they have been given a credit of 21,700,000 francs; the expenses being covered by the loan contracted on the 26th March. The *matériel* in question is a 7.5-cm. gun, recoiling on its carriage, and with a wedge ferreture from the firm of Krupp, at Essen. The extreme rapidity of fire amounts to 20 shots a minute. The gunners are protected by a shield proof against shrapnel and infantry fire. The gun, in addition, carries perfected pointing apparatus, and lateral pointing is easy within strict limits; the ammunition is a complete cartridge; the construction of the hydraulic brake is simple. The weight of the gun and carriage, with its shields, is less than 1,000 kilogrammes. The number of guns authorised by the Chambers for acquisition is 288. The Commission proposed that the constitution of the battery should in future consist of four guns; nothing has, however, been decided on that point up to the present time.

CORRESPONDENCE.

THE REMINISCENCES OF LIEUT.-COLONEL BASIL JACKSON.

To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

SIR,—Referring to the review of the above book in the September JOURNAL, 1903, of the R.U.S.I., page 1096, an error would seem to occur in the first paragraph.

Colonel Gaspard Le Marchant, Lieutenant-Governor of Sandhurst College, while employed there was promoted to the rank of Major-General, and sent to the Peninsula in command of a Brigade of Heavy Cavalry, and was killed while leading them in their charge at the Battle of Salamanca.

His third son, Sir Gaspard Le Marchant, was Lieutenant-Governor and Commander-in-Chief of Newfoundland, Nova Scotia, and Malta, and it was he who commanded the troops in the Madras Presidency.

Yours faithfully,

G. LE M. TUPPER, Lieut.-General,
Colonel Commandant, R.A.

Army and Navy Club,
Pall Mall, S.W.

1st October, 1903.

EXPERIENCES OF REGIMENTAL OFFICERS IN THE FIELD.

To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

SIR,—A son in the West Kent Regiment, during the time he was in South Africa, had so much outpost work that I strongly urged him, whilst the subject was still fresh in his memory, to write out a few wrinkles which might be useful to young officers who had not had the war experience of that backbone of the British Army, viz., the Company Officer.

I herewith enclose a paper just received from my youngest son, now with his Regiment in Ceylon, and trust it may be considered worthy of insertion in the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

If regimental officers could be induced to give their experiences in the JOURNAL, not only on outpost work, but also on other field service matters such as scouting, battle-firing, entrenching, attack and defence formations, convoys, camps, bivouacs, water supply, cooking, etc., not only the Army, but the public would get a better and more valuable insight into the requirements for active service than in the well-rounded periods of the many books lately published on the South African War.

In every regiment there must be at least two or three officers who could give most valuable ideas on one or more of the subjects mentioned. Fortunately or unfortunately, although the world does not contain keener men at their work than the great majority of our captains and subalterns, they, as a rule, are morbidly shy about their ideas on professional subjects appearing in print. If colonels would try and get their officers, who know what war is, to write out their ideas whilst their experiences are still fresh in their memories, the papers would certainly be of far more use to the British Army than the curious autumn manoeuvres of a few years ago, when the soldier was taught "How not to do it."

ALEX. B. TULLOCH, Major-General.

Llanwysk, Crickhowell,
Sept. 3rd, 1903.

NAVAL AND MILITARY CALENDAR.

SEPTEMBER, 1903.

- 4th (F.) H.M.S. "Cæsar" arrived at Portsmouth from Mediterranean.
" " Commission appointed on National Physique.
7th (M.) An Army Order issued by the Commander-in-Chief with regard to Officers' expenses.
8th (T.) Announced that Russia had formally undertaken to commence the evacuation of Manchuria on the 8th October next.
9th (W.) 2nd Bn. Hampshire Regiment left Portsmouth for Malta in the "Soudan."
14th (M.) Army Manœuvres commenced.
15th (T.) Russia and Austria both made strong representations at Constantinople with regard to the Macedonian massacres.
17th (Th.) 2nd Bn. Hampshire Regiment arrived at Malta from Portsmouth in the "Soudan."
" " 1st Bn. Royal Lancashire Regiment left Malta for India in the "Soudan."
" " The Army Manœuvres concluded.
18th (F.) Launch of first-class battle-ship "Hessen" from the Germania Yard, Kiel, for German Navy.
20th (S.) Launch of first-class battle-ship "Vittorio Emanuele III." from Royal Dockyard, Spezia, for Italian Navy.
22nd (T.) Launch of third-class cruiser "Berlin" at Danzig for German Navy.
23rd (W.) H.M.S. "Diadem" and "Scylla" commissioned at Chatham for relief service.
" " 1st Bn. Oxford Light Infantry left England for India in the "Plassy."
24th (Th.) Launch of first-class armoured cruiser "Hampshire" from the Elswick Yard.
25th (F.) Launch of third-class cruiser "Abdul Hamid" from Elswick Yard for Turkish Navy.

FOREIGN PERIODICALS.

NAVAL.

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AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens*. No. 10. Pola : October, 1903.—“Machinery Trials of Our most Recent Ships.” “On the Use of Submarine Boats.” “On the Use of Hammocks for Transport of Sick and Wounded.” “Results of Observations of the Dip of the Sea-Horizon from the U.S.S. ‘Alert’ off the Coast of California.” “Foreign Naval Notes.”

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FRANCE.—*Revue Maritime*. Paris : August, 1903.—“The Control of the Administration of the Navy before Public Opinion and before Parliament” (*continued*). “Statistics of Shipwrecks and Other Accidents at Sea for 1901.”

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International Regulating of Wireless Telegraphy." "On the Diagnosis of Infectious Diseases on board Ship." "The Stowage and Handling of Coal and Briquettes on board Ship." "Frederick the Great and the Emden Asiatic-Chinese Company, 1750-1757." "The English Naval Manœuvres of 1903." "The Firing at the 'Suffren's' Fore-Turret." "The Lodging Allowance Estimates for the French Navy for 1904." "M. Leckroy's Letters on the French Navy." "Foreign Naval Notes."

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SPAIN.—*Revista General de Marina*. Madrid: September, 1903.—
"The Numbers and Assimilation of the various Branches of the Navy." "England and the Modern Submarine." "The United States." "Description of the Turrets for the 24-cm. Guns of the 'Princess Asturias' type of Cruiser" (*continued*). "The English Naval Manœuvres." "Description of the Siemens-Halske Orders-Transmitter on board the 'Cardinal Cisneros.'" "Shamrock III.' and 'Reliance.'" "Three Screws in Ships." "The 'Suffren' and 'Masséna.'" "Foreign Naval Notes."

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NOTICES OF BOOKS.

Campagne de 1793, en Alsace et dans le Palatinat. Par J. COLIN, Capitaine d'Artillerie à la Section Historique de l'Etat Major de l'Armée. Vol. I. Paris: Librairie Militaire, R. Chapelot et Cie., 30, Rue et Passage, Dauphine, 1902.

This work forms one of a series now in progress of publication by the Military History branch of the French Army, which is intended to supply for the use of students the most complete collection possible of authentic documents relating to the several campaigns existing in the archives of the War Ministry.

The actual text of the book is, in accordance with this design, reduced to the very minimum, only sufficient comment and narrative being supplied to connect the many documents and, where necessary, to explain the cause of their origin—the main interest of the work centring in the documents themselves, which are left to tell their own story.

To give a detailed *résumé* of the contents of the 564 pages—mostly small print—of which the present volume consists, is quite beyond the limits of our available space. It must suffice to say that a more invaluable well of information has never yet come under our notice—for in these pages one can trace the whole foundation work which preceded the construction of "La Grande Armée," and follow the gradual process of trial and error out of which, by the survival of the fittest, that wonderful engine of offensive warfare, so exactly adapted to the conditions of its environment, arose.

Our point is this: there is no absolute relation of good and bad either in strategy or tactics, but only a relative relation of better or worse than the methods opposed to them at every moment of a given campaign. Nineteenth or more of existing tactical and strategical literature ignores this distinction more or less entirely, and in proportion to the degree to which they fail to take it into account, their conclusions are more or less misleading—often absolutely pernicious.

The matter is of great immediate importance, as at the present moment there is a pronounced tendency to seek this relation of absolute good or bad in the recorded experience of a campaign entirely unprecedented in its characteristics—geographical, topographical, etc.—to any

which has occurred in the past, or is likely to arise in the future. There are, however, certain curious points of general resemblance between the incidents of 1793 and of the recent war which, if rightly apprehended, may go far to check this proneness to hasty generalisation in the present case.

In 1793, as in 1899, we see a popular levy, almost without previous experience of combined operations in face of the enemy, successfully confronting for a time the onslaught of highly-drilled regular Armies, and by much the same methods, viz., by a system based on skirmishing—i.e., individualism—favoured very markedly in both cases by the topography of the theatre of war.

In both success was due, not to superior fighting power of units, but to greater mobility, due in both cases to relative freedom of movement in regard to communications, and in 1793 to greatly superior numbers, which acted precisely in the same manner as the excess of mobility the Boers enjoyed in South Africa, and both utilised their advantage in identically the same manner, viz., by compelling their enemy to engage under conditions which destroyed the advantages superior drill and organisation would, under more normal conditions, have conferred. The Allies, tied by political reasons to their magazines, were as much hampered in their movements as we by our dependence on the railways, whilst the French, driven by the general need of their situation, were compelled to make war support war, and this tendency, favoured by their mobility, led them to live on their enemy's convoys much as De Wet very recently lived upon ours.

C. von B. K.'s *Geist und Stoff*, and other publications from the Austrian and Prussian Archives, to which we have from time to time called attention, show us the other side of the picture, and without them the real lesson of these campaigns is hardly to be mastered. Read side by side they make the parallel between past and present most strikingly complete, especially with regard to the effect on the disciplinary tendencies in the several Armies.

Thus, whilst the French day by day realised more keenly the disadvantages of the "go-as-you-please" methods under which they laboured, and endeavoured, by the aid of the guillotine and the "representatives of the people," to hammer discipline into the bone and marrow of their willing but insubordinate commandos—precisely as the Boers tried to correct the same weakness by the aid of the "sjambok"—the Allies were crying out against the excess of restraint and want of initiative in their own Armies, thus destroying with their own hands the cohesion which would have stood them in such good stead a few years later against Napoleon's masses.

The closest examination of the evidence we have been able to make fails, however, to reveal tactical deficiencies either in the Austrian or Prussian Armies adequate to affect the general result. Both fought in line when they could, and as skirmishers when the ground compelled them. The Austrians had gone further in the evolution of real light troops than any other Army in Europe, and the Prussians, learning from the Hanoverians and Hessians, and other returned soldiers from the American Wars, were endeavouring to initiate "light companies" in their battalions on precisely the same lines as our own, though with scarcely the same degree of success but the public then took as little notice of this tendency to progress as our own does now, and, like the present British Press, saddled all the responsibility on the Generals and Staff, who had been condemned by national apathy, as with us, to attempt a task far beyond the resources allotted to them.

Scharnhorst alone, in his ever-memorable pamphlet, read the lesson aright, and showed that a spasmodic outburst of interest in a nation constitutionally apathetic towards its defenders could have no prospect of permanent success against a race intensely in earnest to defend its existence, and had the Boer population borne a similar proportion to our own in these latter days, we venture to predict that his prophecy, in the long run, would have proved equally applicable to our own position.

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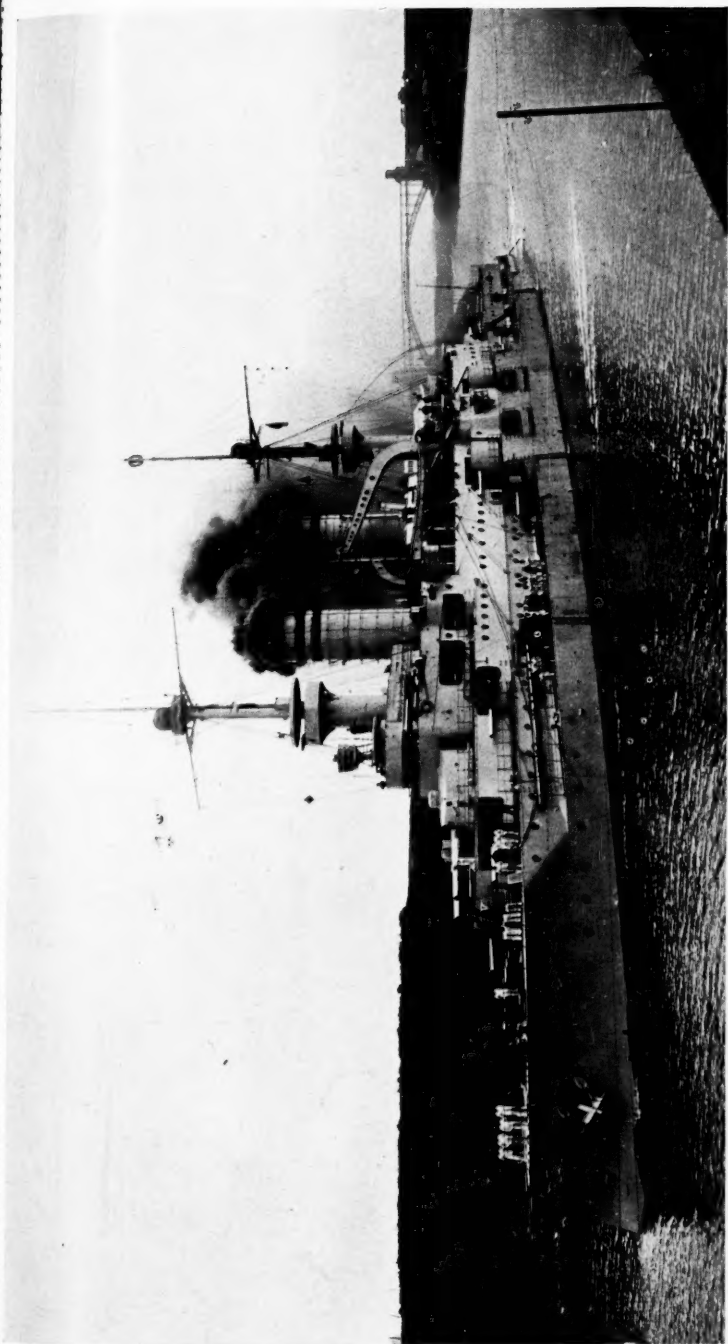
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NAVAL PRIZE ESSAY, 1903.

Essays bearing the following mottoes have been received:

"To be or not to be."

"Strike, and fear not."

"Beware of entrance to a quarrel, etc."

"Vallient et veillant."

"Security."

"Ut quocunque paratus."

"The due consideration of details will result
in maximum efficiency."

"Wind and Fire."

"Alea belli incerta."

ERRATUM IN CALENDAR.

October Journal : Page 1208—
20th (S.) For "Vittorio Emanuele III." read "Napoli."